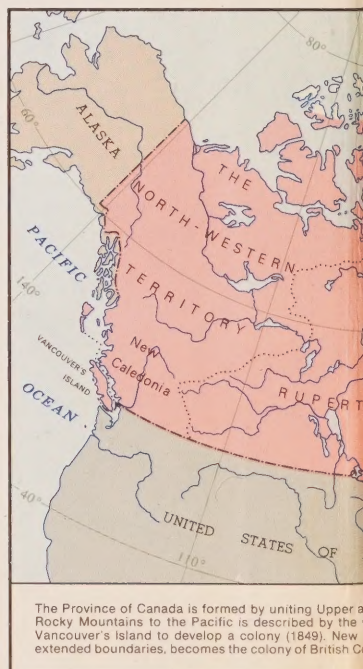
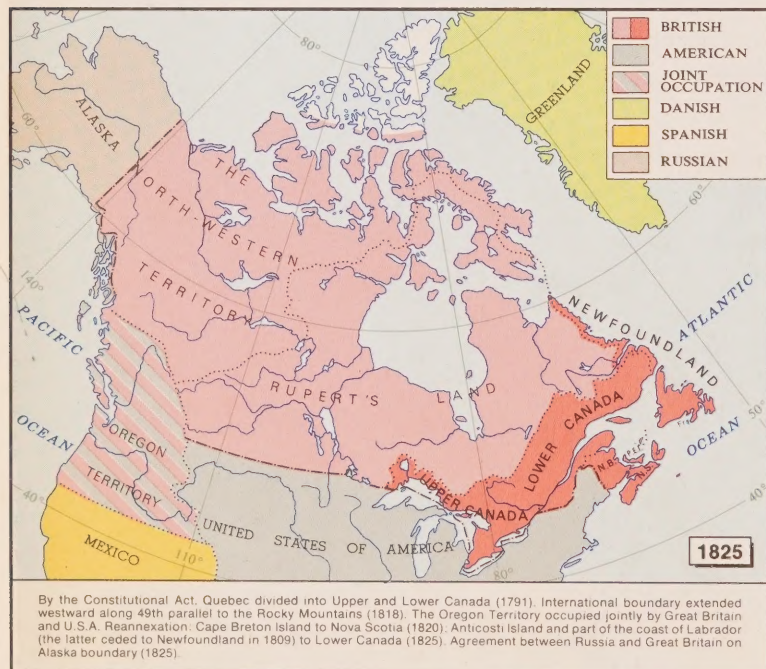
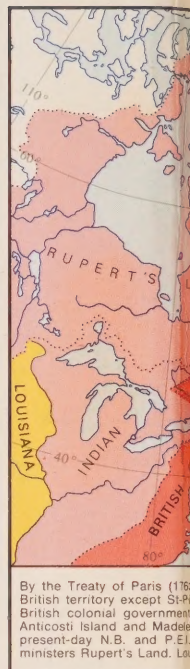
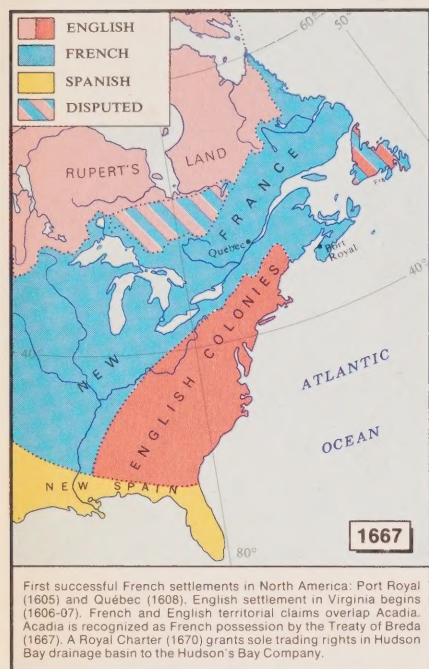


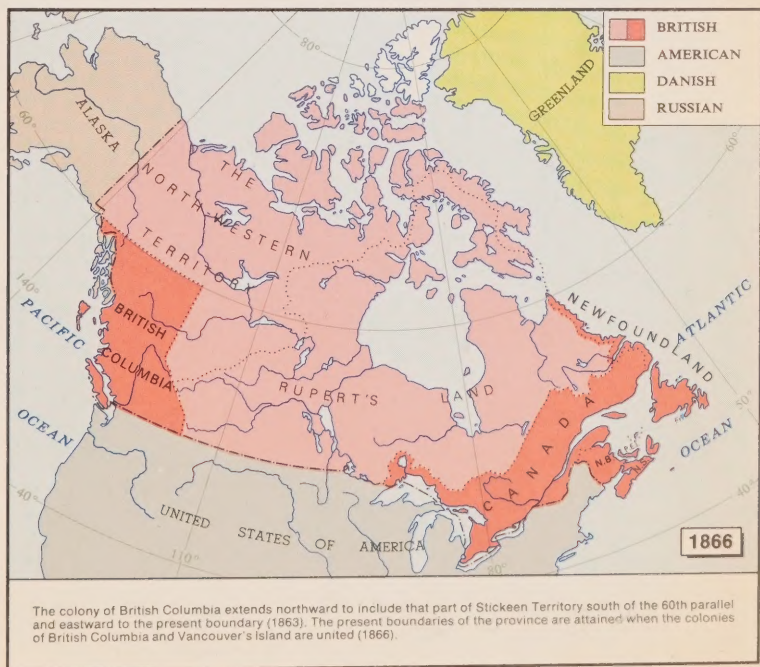
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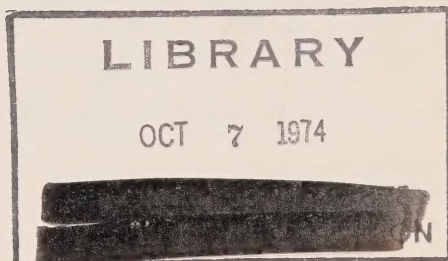
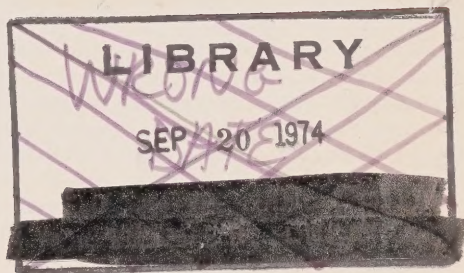
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1973

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INFORMATION CANADA
Ottawa 1973

Preface

The 1973 edition of the *Canada Year Book* continues the series of annual reviews of social, economic and political developments in Canada. The series began in 1905 but earlier editions had appeared under other titles at varying intervals since 1867.

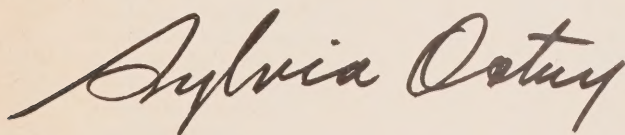
This edition introduces a number of changes in format necessitated by the increasing complexity of subject matter and by the inexorable rise in publishing costs. For example, textual and tabular materials have been separated within each chapter to simplify production. Any problems this might cause in relating text to relevant tables have been minimized by identifying each table both in the appropriate textual location and under its subject heading in the Contents at the front of the book. Another change is the emphasis on the use of charts and graphs in place of pictorial illustrations. Finally, lists of sources in each chapter provide references to additional information on each subject.

Along with the new format there are some changes in content which the reader will find of interest. As it is fifty years since the *Canada Year Book* carried a chapter on Canadian history this seemed an appropriate year to update the earlier article in order to provide a background to the developments recorded elsewhere in the book. Several chapters have been completely revised; for example, the health and welfare chapter has been completely re-written and the former electric power chapter now includes all forms of energy. A new chapter traces the legal system of Canada from its basis in the Constitution, through the court structure to the law enforcement agencies; and the demography chapter combines the former population, vital statistics and immigration chapters. Other chapters have, of course, been brought up to date to reflect changing conditions, including the final chapter on selected economic indicators which summarizes the national accounts.

The popular government organization chart is now presented in a different way. An abbreviated chart appears in Chapter 4 with a list of all departments and agencies, and these organizations are described in detail in Appendix 1 which will be issued separately for use with a detailed chart available from Information Canada. Since certain items, such as diplomatic appointments and sources of official information, are now readily available elsewhere their coverage in the *Canada Year Book* has been discontinued.

As the *Canada Year Book* is an annual reference work the information is that relating to events occurring up to the end of December 1972, unless otherwise stated.

We wish to acknowledge the continued co-operation of the many contributors who so willingly provided information for this issue.

A handwritten signature in dark ink, reading "Sylvia Ostry". The signature is fluid and cursive, with the first name "Sylvia" written in a larger, more prominent script than the last name "Ostry".

Sylvia Ostry
Chief Statistician of Canada
Ottawa, October 1973

Designed and produced in the Canada Year Book Section,
Information Division, Statistics Canada

Editor: Edna Ralston

Assistant Editors: Jean Doraty, Vaughn Chandler

French Editor: Frances O'Malley

Production Supervisor: Loretta Quinn

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Chapter 1

Physiography

1.1 Geography

Canada, occupying the northern half of the North American Continent with the exception of Alaska and Greenland, is the largest country in the Western Hemisphere and the second largest in the world. The lands within its 3,851,809 sq miles of territory are extremely diverse, ranging from the almost semi-tropical areas of the Great Lakes peninsula and the southwest Pacific Coast, wide fertile prairies and great areas of mountains, rocks and lakes to seemingly endless stretches of northern wilderness and arctic tundra. The southernmost point of the country is Middle Island in Lake Erie, at 41° 41'N. In a straight line 2,875 miles northward, past the treeline and far into the Arctic, is Cape Columbia on Ellesmere Island, Canada's northernmost point, at 83° 07'N. From east to west at the widest point, the straight-line distance is 3,223 miles — from Cape Spear, Nfld., at 52° 37'W, to Mount St. Elias, YT, at 141°W.

In position, Canada is situated at the crossroads of contact with the principal powers and some of the most populous areas of the world. In the south, it borders on the United States for a distance of 3,986.8 miles. In the north, the Arctic archipelago penetrates far into the polar basin, making Canada neighbour to northern Europe and the Union of Soviet Socialist Republics. In the east, the salient of Labrador and the island of Newfoundland commands the shortest crossings of the north Atlantic Ocean and links Canada geographically with Britain and France. In the west, the broad arc of land between Vancouver in southern British Columbia and Whitehorse in Yukon Territory provides departure points for crossings of the north Pacific Ocean between continental North America and the Far East. The length of the Yukon - British Columbia border adjoining Alaska is 1,539.8 miles.

In size, Canada's 3,851,809 sq miles may be compared with the area of the USSR at 8,649,539 sq miles, China (including Taiwan) at 3,705,408 sq miles, and Brazil at 3,286,488 sq miles. It is more than 40 times the size of Britain and 18 times the size of France. This immense area, which seems to afford extensive scope for settlement, imposes its own burdens and limitations. Much of the land is mountainous and rocky or is under an arctic climate. The developed portion is probably not more than one third of the total; the occupied farm land is less than 8% and the productive forest land 27% of the total. The population, at approximately 21,569,000 on June 1, 1971, may be compared with 204,800,000 for the United States (1970) and with 95,305,000 for Brazil (1970).

There is no permanent settlement in approximately 89% of the total area of Canada. Only the smallest province, Prince Edward Island, is completely occupied. Large parts of the interior of Nova Scotia, New Brunswick and the Gaspé Peninsula are vacant as is most of the interior of the island of Newfoundland where settlement is confined for the most part to a broken fringe around the coast. On either shore of the St. Lawrence River below Quebec City there is a narrow fringe of settlement, with empty land behind. The continuously settled parts of these maritime areas make up about 1.1% of the area of Canada, and contain 11.7% of its population.

About 57.8% of the population of Canada live in the area between the American border and a 650-mile east-west line from Quebec City to Sault Ste. Marie. Within this area there is continuity of settlement but there are also large unsettled tracts. The block of continuous settlement, whose greatest north-south reach is 270 miles, makes up approximately 2.2% of the area of Canada. The eight largest cities within this block (Montreal, Toronto, Hamilton, Ottawa, London, Windsor, Quebec City, Kitchener) account for 35.8% of the Canadian population.

By far the largest tract of continuous settlement in Canada is in the Prairie Provinces, with a southern margin along the American border of some 900 miles. At its easternmost reach in Manitoba the northern margin of continuous settlement is about 100 miles north of the International Boundary; in the west, the northern margin reaches the 55th parallel, about 400 miles north of the boundary. This settled block occupies about 6.2% of the area of Canada and contains 15.4% of its population. Four cities within the area (Edmonton, Calgary, Winnipeg, Regina) contain 7.3% of the national population. North of this block, the Peace River district, astride the Alberta - British Columbia border, is an agricultural area which reaches the 57th

parallel. This continuously settled area covers about 0.3% of the area of Canada, but contains somewhat less than 0.6% of the country's population.

There is continuity of settlement throughout the southern half of British Columbia, but the continuity is in the form of narrow interconnecting strips following mountain valleys and coastal plains. Between the valleys large areas are empty of permanent settlement. The settled strips occupy about 0.7% of the area of Canada and contain 9.5% of its population. More than 4.0% of the national population is located in the Lower Fraser Valley, principally in the Vancouver metropolitan area.

North of the areas already described there are a number of disjunct settlements, the most notable of which, in regard to size, are in Ontario and Quebec in a band confined by the 47th and 50th parallels. From east to west these are: the Lac St-Jean Lowland some 100 miles north of Quebec City, the Clay Belts astride the Ontario - Quebec border, the Lakehead, and the Dryden and Fort Frances areas in Ontario near the Manitoba boundary. Collectively these blocks of continuous settlement account for about 0.4% of the area of Canada, and approximately 3.6% of its population.

Outside these urban-rural blocks of settlement there are numerous settlements related to mining, forest industries, transportation, administration, defence, hunting, and fishing but with little or no agricultural base. The largest of these isolated settlements, with their 1971 populations, are as follows: Thompson, Man., 19,001; Whitehorse, YT, 11,217; Labrador City and Wabush, Labrador, 11,009; Kenora, Ont., 10,952; Chibougamau, Que., 9,701; Flin Flon, Man. and Sask., 9,344; Fort McMurray, Alta., 6,847; Yellowknife, NWT, 6,122; The Pas, Man., 6,062; Atikokan, Ont., 6,007.

The geographical knowledge of Canada is reasonably complete considering its size and its large areas of difficult access. The whole country has been surveyed and mapped at a scale of 1:250,000, which is very close to four miles to the inch, allowing a detailed depiction of relief, river systems, transportation facilities, forest cover and centres of population. Comparisons of different features and areas can be made, as all map sheets of the series are drawn to the same specifications. In addition, all settled areas and regions of northern development have been mapped at larger scales, in particular at 1:50,000 or approximately one and a quarter inches to the mile, and vertical air photographs showing still more details of the terrain are available for the whole country, varying in scale from about one inch to the mile in the Arctic to four inches, or larger, to the mile in settled areas.

Politically, Canada is divided into ten provinces and two territories. Each province is sovereign in its own sphere and administers its own natural resources and upon such resources, as related to topography, position and climate, is based the economy of the province. The resources (except for game) of the Yukon Territory and Northwest Territories, because of their remoteness, the great extent and the meagre and scattered populations of these areas, are administered by the federal government. The approximate land and freshwater areas of the provinces and territories are given in Table 1.1.

The Canadian Permanent Committee on Geographical Names, administered by the Department of Energy, Mines and Resources, deals with all questions of geographical nomenclature affecting Canada and undertakes research and investigation into the origin and usage of geographical names. The Committee is composed of representatives of the federal mapping agencies and other federal agencies concerned with nomenclature and a representative appointed by each province.

1.1.1 Mountains and other heights

The great Cordilleran mountain system is Canada's most impressive physical feature. Many peaks in the various ranges embodied in the Canadian Cordillera are over 15,000 feet in height, and a total of 576.4 sq miles of territory lies above the 10,000-foot mark. Mount Logan in the St. Elias Mountains of Yukon Territory, which rises 19,850 feet above sea level, is the highest point in Canada.

The highest points in each province are: Newfoundland, 5,232 feet; Prince Edward Island, 465 feet; Nova Scotia, 1,747 feet; New Brunswick, 2,690 feet; Quebec, 5,210 feet; Ontario, 2,275 feet; Manitoba, 2,729 feet; Saskatchewan, 4,567 feet; Alberta, 12,294 feet; British Columbia, 15,300 feet; Yukon Territory, 19,850 feet; and the Northwest Territories, 9,062 feet.

Rossland, BC, is at the highest elevation, 3,465 feet, of any city in Canada and Chilco

Lake, with an area of 75 sq miles, is the highest major lake at 3,842 feet. Heights of the more important Canadian mountains and other elevations are given in Table 1.2.

1.1.2 Inland waters

Every year about 8,000,000 million tons of water fall on Canada in the form of rain and snow. Much of it is evaporated but a large amount drains back to the oceans as surface run-off, forming rivers and lakes along its route. This surface water, ceaselessly moving, is the dominant feature of the Canadian environment. It has been estimated, in fact, that about 7.6% of Canada's total area is covered by fresh water (Table 1.1). There are probably more lakes here than in any other country in the world – so many that they have never been counted. The total area of fresh water is given as 291,571 sq miles but this figure does not include most of the small ponds, non-permanent lakes and sloughs, seasonally flooded areas or large areas of marsh and wet tundra. As much as one seventh of all the fresh, liquid, surface water in the world is contained within Canada's boundaries.

A large portion of this water is contained in the Great Lakes. Slightly more than 37% of their total area is in Canada (Table 1.3). These lakes include some of the largest bodies of fresh water in the world, so large that they have measurable, although very slight, tides.

Other large lakes in Canada, ranging in area from 12,300 to 9,500 sq miles, are Great Bear Lake, Great Slave Lake and Lake Winnipeg. Apart from these, notable for their size, countless smaller lakes are scattered over the major portion of Canada lying within the Canadian Shield. For example, in an area of 6,094 sq miles, accurately mapped, south and east of Lake Winnipeg there are 3,000 lakes; in an area of 5,294 sq miles southwest of Reindeer Lake in Saskatchewan there are 7,500 lakes. The size and elevation of Canada's principal lakes over 150 sq miles in area are listed in Table 1.4.

Lake storage is very valuable – it represents water that can be drawn upon in time of drought to be replaced in time of plenty. Lakes are natural regulators of river flow. But the true measure of a country's water wealth is the amount of water that can be depended upon to be replaced each year – the amount that remains after evaporation has been subtracted from precipitation. This is the amount that flows in its rivers. Here, too, Canada is very fortunate. The combined mean annual flow of all its rivers has been estimated at 3.5 million cu feet per second – about 9% of the total flow of all the rivers of the world. Set against a population of less than 1% of the world total, this constitutes a very generous endowment of fresh water.

It is understandable that Canada's history of settlement and industrial development has been influenced by its great rivers. The country's first industry, the fur trade, flourished because of the ready access to the interior provided by the St. Lawrence River, the Great Lakes and their tributary streams and the many other great and small waterways. Early exploration and settlement depended on this same natural means of access. The plentiful water supplies of the flat and fertile plains of southern Ontario and Quebec attracted an industrious farming people. The river-borne transportation of lumber and later the power of water-driven turbines were vital factors in the building of the country's industrial base. Today, more than ever, water is the key to Canada's development, supplying the renewable energy required for industrial growth, providing easy and relatively cheap transport for bulk raw materials and playing a vital part in the processing of those materials.

Table 1.5 lists the principal rivers of Canada and their tributaries. The tributaries and sub-tributaries are indicated by indentation of names; thus, the Ottawa and other rivers are shown as tributary to the St. Lawrence, and the Gatineau and other rivers as tributary to the Ottawa.

The accompanying map shows the major drainage basins of Canada. Probably the most important is the Atlantic drainage basin, being dominated by the Great Lakes - St. Lawrence system which drains an area of approximately 678,000 sq miles and forms an unequalled navigable inland waterway through a region rich in natural and industrial resources. From the head of Lake Superior to Belle Isle at the entrance of the Gulf of St. Lawrence the distance is 2,280 miles. The entire drainage area to the north of the St. Lawrence and the Great Lakes is occupied by the southern fringe of the Canadian Shield – a rugged, rocky plateau over the edge of which tumble many swift-flowing tributary rivers. These rivers, as well as the St. Lawrence itself, provide the electric power necessary to operate the great industries of the area. South of the St. Lawrence, the smaller rivers are important locally. The Saint John, for instance, drains a fertile area and provides most of New Brunswick's hydro power.



The Hudson Bay drainage basin is the largest in area and its main river is the Nelson. The Winnipeg River, a tributary of the Nelson, is completely developed for hydro-electric power but development of the Nelson itself is just beginning. The two branches of the Saskatchewan River, tributary to the Nelson, drain the great agricultural region of the mid-west and are now the sources of important irrigation projects.

The Arctic drainage basin is dominated by the Mackenzie, one of the world's longest rivers. It flows 2,635 miles from the head of the Finlay River to the Arctic Ocean and drains an area in the three westernmost provinces of approximately 700,000 sq miles. Except for a 16-mile portage in Alberta, barge navigation is possible from Waterways on the Athabasca River to the mouth of the Mackenzie, a distance of 1,700 miles.

The rivers of the Pacific basin rise in the mountains of the Cordilleran Region and flow to the Pacific Ocean over tortuous, precipitous courses, rushing through steep canyons and tumbling over innumerable falls and rapids. They provide power for large hydro-electric developments and in season swarm with salmon returning inland to their spawning grounds. The Fraser River rises in the Rocky Mountains and toward its mouth flows through a rich agricultural area. The Columbia is an international river which has a total fall of 2,650 feet during its course and has thus a tremendous power potential. Although a considerable portion of the United States potential has been developed, Canadian development is relatively slight. The Yukon River is also an international river but, although the largest on the Pacific slope, it is at present relatively unimportant economically.

Utilization of inland water. Over 44% of all water withdrawn in Canada (excluding withdrawals associated with hydro projects) is for one end use, condenser cooling in thermal steam-electric plants. However, about 99% of this water is returned for re-use. Municipal water use, including small industrial processors served by the municipal supply systems of Canada, accounts for some 10% of current daily water withdrawals. On average, approximately 75% of the water pumped into the system is discharged as storm and sanitary sewage containing waste materials.

Other industrial users, manufacturing and mining firms, account for 38% of the total withdrawals of water in Canada and about 10% of that intake is consumed or lost. Discharged water is usually returned to source in a highly polluted condition and may be unfit for most uses downstream. Agriculture requires 8.5% of the nation's total withdrawals annually for irrigation, stockwatering and rural domestic use and most of this water is consumed and not returned to the water supply source.

Hydro-electric power generation utilizes the kinetic energy of falling water to produce energy. Except for evaporation losses from the surface of reservoirs, the water is not consumed or changed in any way. However, serious adverse effects may occur through flooding of land through storage and interference with natural flow up- and down-stream.

1.1.3 Coastal waters

The coastline of Canada, measuring over 150,000 miles, is one of the longest of any country in the world; it comprises the following estimated mileages (statute). Mainland: Atlantic, 9,965; Pacific, 4,363; Hudson Strait, 2,671; Hudson Bay, 6,233; Arctic, 11,884; other, 1,240; total, 36,356 miles. Islands: Atlantic, 18,176; Pacific, 11,620; Hudson Strait, 8,318; Hudson Bay, 6,956; Arctic, 57,016; other, 13,047; total, 115,133 miles.

A comprehensive description of the coastal waters of Canada would require information from sciences such as oceanography, marine biology and meteorology. However, the basic factor in any study of the oceanic-continental margin is the physical relief of the sea floor, and the scope of the information presented here is therefore restricted to this and a few salient features of the Atlantic, Pacific and Arctic marginal seas surrounding Canada.

Atlantic. Along this coastal area, the sea has inundated valleys and lower parts of the Appalachian Mountains as well as those of the Canadian Shield. The submerged continental shelf, protruding seaward from the shore, effects the transition from continental to oceanic conditions. This shelf is distinguished by great width and diversity of relief. From the coast of Nova Scotia its width varies from 60 to 100 miles, from Newfoundland 50 to 120 miles (at the entrance of Hudson Strait), and northward it merges with that of the Arctic Ocean. The outer edge of the shelf, known as the continental shoulder, varies in depth from 100 to 200 fathoms before the shelf suddenly gives way to the steep declivity leading to abyssal depths. The over-all gradient of the Atlantic continental shelf is slight but the whole area is studded with shoals, plateaus, banks, ridges and islands and the coasts of Nova Scotia and Newfoundland are rugged and fringed with islets and shoals. Off Nova Scotia, the 40-fathom line lies at an average of 12 miles from the shore and constitutes the danger line for coastal shipping. The whole floor of the marginal sea appears to be traversed by channels and gullies cutting well into the shelf.

The main topographical features of the Atlantic marginal sea floor are attributed to glacial origin but land erosion is an important factor. Eroded materials are carried seaward by rivers, ice and wind, and wave action against cliffs and shore banks washes away enormous masses that are deposited over the surrounding sea floor. The topography of the continental sea floor is therefore constantly changing and navigation charts of Canada's eastern seaboard must be continuously revised.

Hudson Bay and Hudson Strait bite deeply into the continent. Hudson Bay is an inland sea 317,501 sq miles in area having an average depth of about 70 fathoms; the greatest charted depth in the centre of the Bay is 141 fathoms. Hudson Strait separates Baffin Island from the continental coast and connects Hudson Bay with the Atlantic Ocean. It is 430 miles long and from 37 to 120 miles wide and its greatest charted depth of 481 fathoms is close inside the Atlantic entrance. Great irregularities of the sea floor are indicated but, except in inshore waters, few navigational hazards have been located.

Pacific. The marginal sea of the Pacific differs strikingly from the other marine zones of Canada. The hydrography of British Columbia is characterized by bold, abrupt relief — a repetition of the mountainous landscape. Numerous inlets penetrate the mountainous coasts for distances of 50 to 75 miles. They are usually a mile or two in width and of considerable depth, with steep canyon-like sides. From the islet-strewn coast, the continental shelf extends from 50 to 100 sea miles to its oceanward limit where depths of about 200 fathoms are found. There the sea floor drops rapidly to the Pacific deeps, parts of the western slopes of Vancouver Island and the Queen Charlotte Islands lying only four miles and one mile, respectively, from the edge of the declivity. These great detached land masses are the dominant features of the

Pacific marginal sea. As is to be expected in a region so irregular in hydrographic relief, shoals and pinnacle rocks are numerous, necessitating cautious navigation.

Arctic. The submerged plateau extending from the northern coast of North America is a major part of the great continental shelf surrounding the Arctic Ocean, on which lie all the Arctic islands of Canada, Greenland, and most of the Arctic islands of Europe and Asia. This shelf is most uniformly developed north of Siberia, where it is about 500 miles wide; north of North America it surrounds the western islands of the archipelago and extends 50 to 300 miles seaward from the outermost islands.

The floor of the submerged part of this continental margin is nearly flat to gently undulating, with here and there isolated rises or hollows. Most of it has an average slope seaward of about one half a degree, with an abrupt break at the outer edge to the continental slope whose declivity is commonly six degrees or more. From the Alaskan border eastward to the mouth of the Mackenzie River the shelf is shallow and continuous with the coastal plain on the mainland; the outer edge of the shelf, or continental shoulder, lies at a depth of about 35 fathoms and about 40 nautical miles off shore. This shelf is continuous with that north of Alaska and Siberia. Near the western edge of the Mackenzie River delta, the continental shelf is indented by a deep valley (the so-called Herschel Sea Canyon) whose head comes within 15 miles of the coast. Between Herschel Sea Canyon and Amundsen Gulf, the typical features of the continental shelf are replaced by the submerged portion of the Mackenzie River delta, which forms a great pock-marked undersea plain, most of it less than 30 fathoms deep, up to 75 nautical miles wide and 250 miles long.

North and east of the submerged portion of Mackenzie River delta, the continental shelf, while typical in form, is more deeply submerged than that off the mainland and Alaska. Its gently undulating surface is, for the most part, 200 fathoms or more below sea level, and the well-defined, nearly straight continental shoulder is for the most part over 300 fathoms deep, giving way to the smooth continental slope which extends without significant interruption to the floor of the abyssal Canada Basin at a depth of about 2,000 fathoms. The deeply submerged continental shelf extends along the entire west coast of the Canadian Arctic archipelago from Banks Island to Greenland. All of the major channels between the islands — Amundsen Gulf, M'Clure Strait, Prince Gustav Adolf Sea, Peary Channel, Sverdrup Channel and Nansen Sound — have flattish floors at about the same depth as the shelf and appear to enter it "at grade", although there are a few local irregularities that may be the result of glacial action. No deep indentations or canyons are known to cut the continental slope or continental shelf off the archipelago, except one sinuous canyon that heads off Robeson Channel at the northeastern end, close to the coast of Greenland. The submerged sides of the channels of the archipelago, and the slopes from the shoreline at the western edge of the islands to the inner edge of the deeply submerged shelf, are in many places marked by a series of steps or terraces.

The continental shelf bordering the Arctic Ocean as well as the adjacent mainland, particularly near the delta of the Mackenzie River, and the islands of the archipelago have been subjected to increasingly intensive scientific study and mineral resource exploration during the past 15 years. Co-ordinated and continuing programs of research and surveys have studied the bedrock geology, the development of the terrain, the sediments on the sea floor and the nature and history of the ice caps. Gravity, seismic, aeromagnetic, geomagnetic and geothermal investigations have obtained information on the physical characteristics and structure of the rocks beneath the surface, and the nature and stability of the crust underlying the islands, the continental shelf and the continental slope. A complementary program of geodetic, topographic and hydrographic surveys has provided the necessary background maps and charts, and information about both terrestrial and marine physiography for these studies. Along with the technical surveys and investigations in the physical sciences, there have been less intensive but very relevant studies of the biology of the Arctic lands and oceans. The result of all these activities is that a great deal of reliable scientific information in a wide range of subjects is now available for an area about which very little was known two decades ago.

1.1.4 Islands

The largest islands of Canada are in the North and all experience an arctic climate. The northern group extends from the islands in James Bay to Ellesmere Island which reaches 83° 07'N. Those in the District of Franklin lie north of the mainland of Canada and are generally

referred to as the Canadian Arctic archipelago; those in the extreme north — lying north of the M'Clure Strait - Viscount Melville Sound - Barrow Strait - Lancaster Sound water passage — are known as the Queen Elizabeth Islands.

On the west coast, Vancouver Island and the Queen Charlotte Islands are the largest and the most important but the coastal waters are studded with many small rocky islands.

The island of Newfoundland forming part of the province of Newfoundland, the province of Prince Edward Island, Cape Breton Island forming part of the province of Nova Scotia, Grand Manan and Campobello Islands forming part of the province of New Brunswick, and Anticosti Island and the Magdalen group included in the province of Quebec are the largest islands off the east coast.

Notable islands of the inland waters include Manitoulin Island (1,068 sq miles in area) lying in Lake Huron, the so-called Thirty Thousand Islands of Georgian Bay and the Thousand Islands in the outlet from Lake Ontario into the St. Lawrence River.

The areas of principal islands by region are given in Table 1.6.

1.1.5 Surveying and mapping

The needs for maps and surveys of Canada are met mainly by the Department of Energy, Mines and Resources. Although not all branches of this Department make surveys and compile maps, many of them are involved in such work either wholly or partly. They compile topographical, geological and aeromagnetic maps, aeronautical charts and specialized maps showing electoral district boundaries, land use and other features. In carrying out these tasks, the Department is guided partly by long-range plans based on general national needs and partly by requests from other government agencies and private enterprise. Some types of maps and surveys are also produced by provincial and private agencies and, to avoid duplication, the Department co-ordinates its work with these bodies. Other types — such as aeronautical charts — are produced exclusively by the Department. Of the various branches, the following are particularly concerned with surveying and mapping: Surveys and Mapping Branch (geodetic and topographic surveys, legal surveys of Canada lands, geographical atlases, electoral maps and aeronautical charts); Geological Survey of Canada (geological features); and Earth Physics Branch (geophysical maps).

Types of surveys. In the field of geodesy, the Geodetic Survey maintains a network of horizontal and vertical control points across Canada. Much of its present activity is centred on achieving greater density of control and closing gaps in southern Canada. The ultimate goal is the establishment of at least one horizontal and vertical control point within ten miles of any point in established and economically important areas.

The Topographical Survey is proceeding with the compilation of topographical maps. The mapping of Canada at the scale of four miles to one inch is complete; this series will be revised and updated from time to time. On the scale of one mile to one and a quarter inches, 5,000 map sheets are available of a planned 13,150. Sheets published to date cover most of the settled areas of Canada and certain wilderness areas of interest because of resources or defence requirements. On the relatively large scale of one mile to two and a half inches, 800 maps are available, covering all major cities and their suburbs. Wide acceptance has been found for photomaps, a relatively new map-type made possible by advances in air photography and photogrammetry.

The Legal Surveys Division is responsible for the technical management of legal surveys of land under federal jurisdiction, such as the northern Territories, national parks and Indian reserves. It also executes such surveys on behalf of administering departments, collaborates in the demarcation of provincial boundaries, prepares descriptions of electoral districts and generally provides land-surveying services to other departments.

The Surveys and Mapping Branch is the major agency in Canada for the preparation of aeronautical charts showing airports, airways and radio and other aids necessary for air navigation. As a service to map-makers, prospectors, engineers, foresters, town planners and others interested in that field, the Department maintains a National Air Photo Library in Ottawa containing a collection of all air photographs taken by or for the federal government — about 4 million black-and-white and colour prints. During the course of a year, the Library may receive requests for more than 1 million copies of such prints. The Library is also responsible for the storage, documentation and handling of airborne remote sensing

photography and Earth Resources Technology Satellite imagery. Photographs can be ordered through the Library in Ottawa or at the Geological Survey's Institute of Sedimentary and Petroleum Geology in Calgary.

Geological surveys provide an inventory of the potential resources of Canada, aid in the discovery of mineral deposits, and assist in other aspects of the national economy influenced by geological factors. Each year, over 100 parties are placed in the field. Large reconnaissance projects are mounted in the northern regions of the country, and more detailed investigations in the better-known southern areas. Geological maps are published either separately or, more commonly, as part of scientific papers.

Both the Geological Survey and the Earth Physics Branch carry out geophysical surveys, resulting in maps showing such features as variations in terrestrial magnetism, gravity and seismology. The geophysicists of the Geological Survey are interested mainly in outlining local magnetic variations indicative of mineral deposits, while those of the Earth Physics Branch map the earth's total magnetic field. The Earth Physics Branch operates 23 first-order and six second-order seismic observatories throughout Canada, whose records are used in compiling and updating an earthquake zoning map of Canada of interest to architects and engineers. A gravity map of Canada is also being published and updated.

In the drafting and printing of the maps, highly advanced techniques for the automatic transfer of terrain features from air photos to drafting sheets and precise lithographing are combined to assure speedy processing of field data and the production of colourful, easily understood and relatively inexpensive maps for every type of user, from vacationer to town planner and from prospector to pilot. In the fall of 1972, the first map using the automated cartography system developed by the Surveys and Mapping Branch was produced. This system allows maps to be drawn directly from a computerized data base rather than through the use of draftsmen. The Department operates a large modern plant to print maps and charts compiled by its several branches and by other government departments and agencies. The Surveys and Mapping Branch has a stock of 22.6 million maps from which it distributes about 4 million annually.

1.2 Geology

Canada is composed of some 17 geological provinces that may be grouped under four main categories — continental shelf, platform, orogen and shield. The geologically youngest provinces, the Atlantic, Pacific and Arctic Continental Shelves are made up of little deformed sediments and volcanics, mainly of Mesozoic and Cenozoic age, which have accumulated and are still accumulating along the margins of the present continental mass. The St. Lawrence, Interior, Arctic and Hudson Platforms are formed of thick flat-lying Phanerozoic strata which cover large parts of the crystalline basement rocks of the continental interior, the extension of the Canadian Shield. The Appalachian, Cordilleran and Innuitian Orogens are mountain belts of deformed and metamorphosed sedimentary and volcanic rocks mainly of Phanerozoic and Proterozoic age, intruded by granitic plutons. They were produced during the various Phanerozoic orogenies 50 to 500 million years ago. Of the seven provinces comprising the Precambrian Canadian Shield, the Grenville, Churchill, Southern and Bear embrace the orogenic belts that were produced during the Proterozoic orogenies, 900 to 1,800 million years ago. The remaining three, the Superior, Slave and Nutak Provinces, were deformed during the Archean Eon, and include the oldest continental crust known in Canada, 2,500 to 3,000 million years old. The Precambrian orogenic belts have many features in common with those of Phanerozoic age but are so deeply eroded that the mountainous parts have been reduced to plains or lowlands and in many places the basement crystalline rocks upon which the sediments and volcanics initially accumulated are now exposed.

The land and freshwater area of Canada is 3,852,000 sq miles, but unique among the nations of the world, Canada also includes within this area some 858,000 sq miles of marine waters. The rocks beneath have geological features akin to the adjacent regions on-shore. In addition, the submarine area of the bordering continental shelves is about 523,000 sq miles and of the continental slopes, 563,000 sq miles. In common with other maritime nations, Canada exercises sovereign rights over all these adjacent regions under the sea for the purpose of exploring and exploiting their natural resources, and so, within the confines of the continental slopes, Canada embraces 5,526,000 sq miles (15,000,000 sq km), about 3% of the surface of the globe.

The mineral industry is one of the more important sectors of the Canadian economy. The value of mineral production in 1972 was \$6,341 million, of which metals represented 46%, fuels 37%, and industrial minerals 17%. Much was exported, mainly to the United States, Britain and Japan. Principal minerals were oil, natural gas, nickel, copper, iron ore, zinc, asbestos, cement, and sand and gravel. Other important products were lead, gold, silver, potash, sulphur, molybdenum, coal, uranium, salt, titanium, platinum and gypsum. Of the major geological regions, the Interior Platform yields, in value, about 39% of all mineral production, mainly fuels, and the Canadian Shield about 36%, mainly metals. Cordilleran Orogen accounts for 12%, Appalachian Orogen 8% and St. Lawrence Platform 5%.

1.2.1 Continental shelves

The youngest, or geologically newest, provinces are the continental shelves which, with the continental slopes and the coastal plains, form broad sedimentary prisms, the outer margins of which lie at the transition from continental to oceanic crust. They transect several older geological provinces at sharp angles, or lie subparallel with bordering and underlying orogenic belts. The shelf deposits are mainly Mesozoic and Cenozoic clastics, partly deltaic, with some Paleozoic and Proterozoic rocks. Current exploration is for oil and gas.

1.2.2 Platforms

The platformal regions are underlain by nearly flat-lying Phanerozoic strata that lie unconformably upon peneplaned Precambrian crystalline rocks. They are warped into basins, embayments and arches which reflect gentle differential subsidence or uplift and tilting of the crust; some faulting may have produced graben.

The St. Lawrence Platform is underlain by thin sandstone, carbonate, evaporite and shale, Cambrian to Devonian in age. The platform includes the southwest-plunging Algonquin Arch, remnants of several basins, and the cover on the Grenvillian deformed basement of Great Northern Inlier. The strata yield salt, gypsum, oil and gas, and structural and building materials, the latter partly from glacial deposits. Columbium is mined from one of the Cretaceous, Montegregian alkaline plugs that intrudes a basement inlier.

The Interior Platform contains several superimposed, unconformity-bounded sequences of Phanerozoic strata, the present structural features having little in common with those of earlier periods. The platform basement consists of Precambrian crystalline rocks bearing Kenoran and Hudsonian isotopic ages and, in the north, little deformed Helikian and Hadrynian platformal sediments.

Thick cycles of Cambrian carbonate and shale in Lloydminster Embayment grade eastward into sandstone. Ordovician and Silurian carbonate, shale and anhydrite form a thick, uniform plate in the northwest and the initial deposits of the weakly depressed Williston Basin. In Manitoba, the Ordovician Tyndall building stone and Silurian gypsum are utilized.

Middle Devonian evaporites, carbonates and clastics form Elk Point Basin, a broad, deep embayment bounded on the west by Alberta Arch. Potash salts are recovered by mining, and halite as a brine. Islands of Precambrian along Tathlina Arch were surrounded by carbonate banks and reefs, some now yielding oil and gas. One dolomitized reef above the continuation of the McDonald basement fault hosts the Pine Point lead-zinc orebody. Upper Devonian cyclical sequences of anhydrite, dolomite and siltstone grade into the massive carbonate banks and isolated reefs of central Alberta. These carbonates contain half the oil and a quarter of the gas reserves of the Interior Platform. The shales between the reefs intertongue northward with siltstone and sandstone, partly non-marine, derived from the Devonian Ellesmerian mountains bordering the Arctic Ocean. During the Mississippian, carbonate, anhydrite, and fine clastics reflect a regional, progressive, rhythmically interrupted, westward regression of the seas. These rocks have a tenth of the oil reserves and a fifth of the gas.

The late Paleozoic and early Mesozoic were mainly times of erosion. Some Pennsylvanian and Permian red beds, evaporites and chert occur. Triassic carbonates, evaporites, and easterly-derived clastics lie along the southwestern border. In Williston Basin are Jurassic siltstone, shale, anhydrite and carbonate.

During the Early Cretaceous there was a rapid marine incursion from the Arctic Ocean over the bevelled, west-dipping Paleozoic strata. Periodic uplifts, associated with phases of the Jura-Cretaceous Columbian Orogeny and the Tertiary Laramide Orogeny, produced the vast quantities of sandstone and shale that form Rocky Mountain Exogeosyncline. The marine

beach and deltaic sandstones hold reserves of about one third the marketable gas and a quarter of the oil. The Lower Cretaceous also contains the Athabasca oil sands with reserves of 266,000 million barrels of recoverable upgraded oil. Coal deposits are lignite to high volatile subbituminous in rank.

The Arctic Platform. Thick Paleozoic carbonates and basal clastics constitute most of the Arctic Platform. They are divided into several basins and embayments by arches and uplifts of Precambrian basement, toward which the strata generally thin and converge. The core of Boothia Uplift is formed of fault-bounded Precambrian crystalline rocks, uplifted and exposed during the Devonian. The derived clastics were trapped in adjacent basins, and the bordering Lower Paleozoic strata deformed to form Cornwallis Fold Belt.

The Hudson Platform includes the Phanerozoic rocks in the basins and graben underlying and adjoining Hudson Bay and Hudson Strait. Ordovician to Devonian carbonate, gypsum, shale and marginal sandstones have lithological and faunal affinities with the three other platformal regions. Moose River Basin, which contains Lower Cretaceous clastics and lignite, is bounded on the south by a basement uplift that was active during the Devonian.

1.2.3 Phanerozoic orogens

The Appalachian Orogen consists of a fold belt of late Precambrian and early Paleozoic strata that were deformed in the Hadrynian Avalonian, Ordovician Taconian and Devonian Acadian Orogenies, and the Fundy Epieugeosyncline of late Paleozoic strata involved in the Maritime Disturbance.

The Appalachian Geosyncline developed on the southeast flank of the Grenvillian Orogen with the deposition of thick, Hadrynian clastic and volcanic rocks. During the early Paleozoic, clastics, turbidite breccias, thick volcanics and ultrabasic intrusions accumulated, bordered on the northwest and southeast by thin carbonate and shale sequences. Deformation was mainly northwesterly thrusting and close folding; some older rocks were deformed several times. Parts were metamorphosed and intruded by granitic stocks and batholiths. Asbestos, copper, zinc, silver and lead are produced.

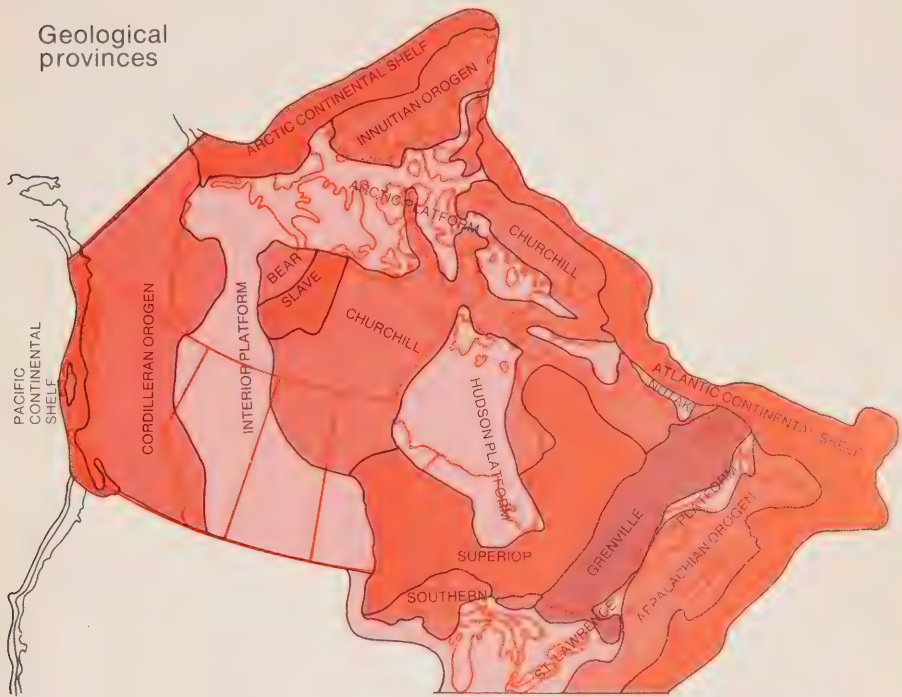
Late Paleozoic non-marine sandstones and shales were deposited in the intermontane basins of the Fundy Epieugeosyncline and derived from intervening, fault-bounded uplands. Subsidence of the basins generally occurred contemporaneously with uplifting and faulting. Some marine deposits are limestone, gypsum and salt which are all mined, and are also the host rocks of a barite deposit beneath which is a lead-zinc-copper-silver sulphide orebody. The non-marine beds have yielded high volatile bituminous coal for nearly 200 years. Upper Triassic red beds and basalt underlie the Bay of Fundy. During the Mesozoic and Cenozoic, the Appalachian Orogen was undergoing erosion, the products being deposited on the Atlantic Continental Shelf.

The Cordilleran Orogen of Canada is part of the circum-Pacific orogenic belt. The eastern part underwent superficial deformation in the Jura-Cretaceous Columbian and Tertiary Laramide Orogenies. Natural gas, oil and coal are produced. More westerly parts suffered multiple deformation, metamorphism and plutonism, these regions yielding lead, zinc, silver and copper, most of the molybdenum, antimony, bismuth, cadmium and tungsten produced in Canada, and all the tin and mercury. Also mined are asbestos, coal, gold, nickel, iron and barite.

The Cordilleran Geosyncline was initiated in the early Helikian with the deposition of very thick, shallow-water carbonates, sandstones and shales, host to the Sullivan lead-zinc orebody (1,340 million years) which has yielded about half of the mineral wealth of British Columbia. The Helikian strata were gently folded, metamorphosed and intruded by granite. The unconformably overlying Hadrynian consists of thick slate, grit and conglomerate, partly of glacial origin, and chert-hematite iron-formation.

The Cambrian to Devonian sequences are composed of sandstones and carbonates which grade westward into a widespread shale facies and thence, into chert, argillite, sandstone and volcanics with ultrabasic bodies. The metacarbonates, mainly Cambrian, of the Omineca Crystalline Belt and the Selwyn Fold Belt, host lead, zinc, silver and tungsten deposits.

The Mississippian lies unconformably on older rocks deformed in the Devonian Caribooan and Ellesmerian Orogenies, but near the craton rest conformably on the Devonian.



The carbonates are reservoirs for oil and gas. Much sulphur is recovered in processing the gas. The Mississippian, Pennsylvanian and Permian contain sandstone, limestone, chert and phosphatic sediments and in the west, basic volcanics, black shale, volcanic arenite, limestone, chert, and many ultrabasic bodies which lie close to the major faults.

During the early Mesozoic, depositional conditions comparable to those of the late Paleozoic prevailed, but later, as the effects of the various orogenies amassed, deposition ceased and mountain belts formed. The Triassic is represented by thick argillite, chert, volcanics, some red beds near local uplifts, and a widespread limestone. The Jurassic includes coarse polymictic conglomerate, turbidite, and volcanics, deposition being interrupted in the Columbia Intermontane Belt by the Inklinian and Nassian Orogenies. Porphyry copper and molybdenum deposits occur in brecciated Inklinian intrusions; other copper deposits occur in the basic volcanics, some carrying zinc and gold. The Nassian Orogeny segmented the Columbia Intermontane Belt into three basins which were gradually filled with detritus, the northern two becoming landlocked. These basins yield Jura-Cretaceous coal. Nassian Orogeny also affected the Insular Fold Belt; intrusions on Vancouver Island produced magnetite-bearing skarns in the Triassic limestones.

Most of the Cordilleran Geosyncline was deformed during the Jura-Cretaceous Columbian Orogeny. Clastics derived from the mountains were deposited on Pacific and Arctic Continental Shelves, in the intermontane basins and foredeeps, and ultimately, as the craton was regionally depressed, in Rocky Mountain Exogeosyncline. Most deformation ended with the Laramide Orogeny. In eastern Rocky Mountain Thrust Belt, the folds and thrusts trap Mississippian oil and gas and repeat Jura-Cretaceous coal seams. Fluvial and lacustrine clastics fill some linear fault-bounded intermontane valleys and trenches. Mercury deposits are associated with some of the faults. Much of the Columbia Intermontane Belt was covered by widespread flood basalts and several younger volcanoes and cinder cones but generally, conditions of erosion prevailed into glacial times. In unglaciated areas, and in deep valleys, the Klondike and Cariboo gold placers were preserved.

The Innuitian Orogen. During the early Paleozoic, Franklinian Geosyncline extended from eastern Greenland along the northern margin of the continent into Alaska. In the Arctic Islands, it was initiated in the late Precambrian, underwent minor deformation during the Cambrian and Early Devonian, but was severely deformed only in the Devonian-Mississippian Ellesmerian Orogeny. Superimposed upon the deformed belt is Sverdrup Basin which contains a thick, concordant succession, late Paleozoic to Tertiary in age, that was deformed by the Tertiary Eurekan Orogeny in the northeast and by evaporite diapirism in the southwest.

The Hadrynian and Cambrian consist of dolomite, shale, quartzite and some meta-sedimentary and meta-volcanic rocks. Thick Ordovician to Devonian carbonate sequences are partly reefy or interbedded with anhydrite and grade abruptly northward into graptolitic shale. Clastics and volcanics bordering the Arctic Ocean are metamorphosed and intruded by granite during Ellesmerian Orogeny.

In Sverdrup Basin, Pennsylvanian and Permian sandstone grade northwestward into limestone, shale, biohermal reefs, and anhydrite, the source for the evaporite diapirs. The Mesozoic is characterized by intertonguing shales and sandstones, partly non-marine, which are derived from the south, east and northwest. Recent drilling has encountered gas and oil. In Prince Patrick Uplift, the strata are broken by north-trending Jurassic and Tertiary normal faults.

1.2.4 Canadian Shield

The Precambrian rocks of the Canadian Shield are grouped into provinces and sub-provinces on the basis of stratigraphic relationships, structural and metamorphic features produced by major orogenies, and concentrations of isotopic ages from plutonic rocks. The orogenies and isotopic ages also provide the framework for a time-classification for the Precambrian — the Kenoran Orogeny, with a mean age of 2,480 million years, occurring at the end of the Archean Eon, and the Hudsonian and Grenvillian Orogenies with mean ages of 1,735 and 955 million years, respectively, at the end of the Aphebian and Helikian Eras. These latter, together with the Hadrynian Era, constitute the Proterozoic Eon. The Elsonian plutonic event, with a mean age of 1,390 million years, serves to divide the Helikian into the Paleohelikian and Neohelikian Sub-eras. The limits of the provinces do not correspond with those of the old orogenic belt, e.g., the Archean rocks of Kenoran Orogen extend beyond Superior Province into Grenville and Churchill Provinces. Furthermore, many of the orogenic belts of the Shield are largely denuded of the supracrustal rocks that were laid down in the depositional interval preceding the major orogeny. Large parts are composed of rocks that formed the basement upon which the sequences were deposited and which reflect the deformation that occurred deep within the crust beneath the mountain belt, now entirely destroyed by erosion.

Grenville Province is a linear orogenic belt that transects several other structural provinces of the Shield and extends beneath Appalachian Orogen, possibly to the continental border. Archean rocks, separated from those of the Superior Province by a metamorphic front, are massive granites and gneisses derived from volcanic and sedimentary rocks. The Aphebian is represented by paragneiss and schist with remnants of quartzite, marble, and iron-formation, the latter containing the magnetite and specularite orebodies at Wabush Lake and Lac Jeannine.

The Paleohelikian includes thick marble, quartzite, and paragneiss with minor volcanics. The Elsonian intrusions, accompanied by high-grade metamorphism, are layered anorthosite with border phases of mangerite. The intrusions contain bands of ilmenite-hematite and titaniferous magnetite which are mined at Lac Tio and St. Urbain. Neohelikian rocks occur as paragneiss and schist remnants and as a thick sequence of red clastics, limestone, basalt and diabase sills in Naskapi Fold Belt. Related to the Grenvillian Orogeny are quartz monzonite, syenite and nepheline syenite bodies, northeast-trending folds, and moderate- to high-grade metamorphism. Small, unconformable remnants of Hadrynian arkose occur.

Southern Province. Only disconnected parts of Southern Province lie in Canada. Within the Penokean Fold Belt the early Aphebian Huronian succession embraces four unconformity-bounded groups, each composed of a basal conglomerate, possibly tillite, overlain by argillite, quartzite, and limestone. Some conglomerates at Blind River are rich in uraninite, and constitute most of the uranium reserves. The Huronian is intruded by the Nipissing diabase (2,150 million years). The uppermost group overlaps northward onto the

Archean and forms the gently warped Cobalt Embayment, host for silver and cobalt veins. The Huronian was folded, metamorphosed and intruded by granitic plutons (1,750 to 2,140 million years) and by the Sudbury Irruptive (1,720 million years) which contains nickel, copper, gold, silver, cobalt and the rare platinum group metals. In Port Arthur Homocline, the Animikean rocks, probably Mid-Apheblian, form a thin southerly dipping succession of conglomerate, cherty iron-formation and black slate. In Lake Superior Basin and Nipigon Embayment are thin Helikian red arenites, the unconformably overlying Keweenawan basalt (1,100 million years), and gabbro sills and sheets.

Bear Province is composed of Hudsonian deformed Apheblian rocks, the Wopmay Orogen, and a thick Helikian cover, the Coppermine Homocline. The northeastern-most Apheblian sediments are pierced by uplifts of Archean basement. To the west lies a narrow fold and thrust belt of quartzite, shale, stromatolitic dolomite and diabase sills which grade westward into fine clastics and red beds. Farther west is a broad belt of gneiss, migmatite and granite; part may be Archean. Late Apheblian basins contain red beds and porphyritic volcanics cut by veins containing radium, silver, cobalt, and uranium at Eldorado. Coppermine Homocline contains gently warped quartzite and stromatolitic dolomite cut by diabase dyke swarms (1,200 million years) and by the Muskox ultramafic body. Unconformably overlying are thin clastics and dolomite, the thick Neohelikian Coppermine basalts, and Hadrynian clastics, dolomite, and gypsum with diabase sills (650 million years).

Churchill Province embraces nearly half the Canadian Shield. It is composed of several geosynclinal belts of Apheblian rocks that were deformed in the Hudsonian Orogeny, large tracts of Archean rocks that were redeformed, remetamorphosed and remobilized during the orogeny, and remnants of post-orogenic Helikian cover rocks.

The Archean rocks are vaguely aligned in east-west trending belts and exhibit at least two directions of folding. In the Flin Flon and Ennadai Belts are typical thick sequences of volcanic rocks and related sediments. The volcanics of Flin Flon Belt host massive sulphide orebodies of copper, zinc, lead, silver and gold. Paragneiss characterizes the Lynn Lake Belt in which gabbro intrusions carry copper-nickel deposits, and also the Tazin Belt which contains much calc-silicate gneiss and quartzite.

Some Apheblian rocks are partly undeformed and border Superior and Slave Provinces; others form northeast-trending gneiss belts in the interior. During the Apheblian, the Archean rocks of Superior, Slave and Nutak Provinces formed stable cratonic blocks, their bordering geosynclines joining those in Bear, Southern and Grenville Provinces.

In the Labrador Fold Belt the Apheblian is represented by fine clastics, dolomite and iron-formation, leached to form the large Schefferville iron orebodies. The strata are repeated by closely spaced east-dipping thrusts and concentric folds. To the east and in the Cape Smith Fold Belt are broadly folded and thrustured basic volcanics interbedded with schist and intruded by gabbro and peridotite sills. Further east and north are Apheblian and Archean gneisses and granites. Bordering Nutak Province are mylonite zones and the Elsonian anorthositic intrusions. On Baffin Island the high grade gneisses include an exceptionally pure iron orebody that occurs in iron-formation that was metamorphosed, enriched and remetamorphosed. In the Belcher Fold Belt, the Apheblian forms huge, broad folds and consists of clastics, dolomite, iron-formation, basalt and gabbro sills. The Thompson Belt includes a narrow zone of faulted Apheblian gneisses intruded by peridotite pods bearing nickel sulphide orebodies and separates the strikingly different Archean blocks of the Pikwitonei Belt, Superior Province and the Flin Flon and Lynn Lake Belts of Churchill Province.

Within western Churchill Province are *en échelon* belts of northeast-trending Apheblian rocks some of which lie unconformably on Archean basement. Intervening and adjacent plutonic belts are very extensive and are probably partly Archean. Bordering East Arm Fold Belt, a remnant of the geosyncline on the east side of Slave Province, is McDonald fault system. This is a zone of dextral transcurrent faults that extends southwestward beneath Interior Platform to the Cordilleran Orogen. Paleohelikian conglomerates derived from associated uplifts were deposited unconformably on the Apheblian rocks of East Arm Fold Belt. Several other fault systems also cross western Churchill Province with displacements occurring at various times; some are associated with diabase dyke intrusions. The multiple-aged uraninite and pitchblende deposits of the Beaverlodge camp are associated with a northeast-trending sinistral fault system transecting Tazin Belt. The Paleohelikian is

represented by red beds with basalt or felsic porphyry that occur in fault founded graben in the Tazin Belt and the Thelon Plate, or by thick easterly derived sandstone forming the Athabasca and Thelon Basins.

Nutak Province, formerly termed eastern Nain Province, is a narrow belt of northeast-trending Archean granodioritic gneiss and migmatite unconformably overlain by flat-lying Proterozoic sediments and volcanics.

Slave Province. The Archean consists of basalt and andesite flows with over-lying, or equivalent, greywacke, shale and conglomerate resting in places on an older basement. During Kenoran Orogeny (2,460 million years) these rocks were folded, intruded by granodiorite and quartz monzonite plutons and pegmatite dykes, and metamorphosed. Shear zones, with gold-bearing ore shoots at Yellowknife, cut the volcanic rocks and are possibly related to a younger episode of folding. Aphebian and Helikian events include intrusion of diabase dyke swarms and faulting.

Superior Province. The Archean rocks of Superior Province fall into several belts or segments with common tectonic and lithological features — dominantly sedimentary, volcanic or plutonic, that may reflect not only the relative ages of the rocks but also the general distribution of the Archean geosynclinal and orogenic belts.

The dominantly sedimentary regime is represented by the English River and Quetico Belts of easterly trending paragneiss and by their extensions into central Quebec. Where least metamorphosed the sediments are greywacke and shale, impure quartzite and arkose with minor volcanic rocks, mainly basalt. The youngest rocks occur in synclinoria and include iron-formation and conglomerates, some with clasts of granite and gneiss.

Thick volcanic assemblages form the typical Archean “greenstones” dominating Abitibi, Wawa, Wabigoon, Uchi and Sachigo Belts. They are mainly basalt and andesite but include much pyroclastic material of intermediate and acidic composition, sills and masses of gabbro, diorite and peridotite, rare anorthosite, and beds of greywacke, argillite, conglomerate, and iron-formation, the latter mined at Steep Rock, Michipicoten, Timagami and Kirkland Lake. The volcanics, near the Cadillac and Porcupine-Destor faults, host the polymetallic sulphide orebodies of the Noranda, Timmins, Kirkland Lake and Metagami camps that yield the greater part of the copper, zinc, gold and silver obtained from the Shield. The strata are intruded by granitic stocks and batholiths, and folded several times, but the metamorphism is generally low grade.

The plutonic regions, such as the Ungava, Wawa and Berens Belts, are characterized by multiple batholithic intrusions. The intrusions vary in composition and may be massive, porphyritic, or gneissic. Associated are granulite, migmatite and a few scattered remnants of sedimentary and volcanic rocks.

In the Proterozoic, the Archean rocks were subjected to several intervals of faulting, some related to intrusion of diabase dykes and carbonatite or syenite complexes, but in general, since the Kenoran Orogeny, Superior Province has behaved tectonically as a stable cratonic block.

1.3 Climate and time zones

1.3.1 Climate

Just as there are great differences in the weather throughout Canada at any given instant, there are also many climates. These climates are similar to those in Europe and Asia extending from the Arctic down to the mid-northern hemispheric latitudes. Because Canada is situated in the northern half of the hemisphere, most of the country loses more heat annually than it receives from the sun. The general atmospheric circulation compensates for this and at the same time produces a general movement of air from west to east. Migrant low pressure areas move across the country in this “westerly zone”, producing storms and bad weather. In intervals between storms there prevails the fair weather associated with high pressure areas.

Although the movement of migrant high and low pressure systems within the zone of the westerlies is the most significant climatic control over Canada, the physical geography of North America contributes greatly to the climate. On the west coast, the western Cordillera limits mild air from the Pacific to a narrow band along the coast, while the prairies to the east of the mountains are dry and have extreme temperatures because they are shielded from the Pacific Ocean and are in the interior of a large land mass. In addition, the prairies are part of a

wide north-south corridor open to rapid air flow from either north or south which often brings sudden and drastic weather changes to this interior area. On the other hand, the large water surfaces of eastern Canada produce a considerable modification to the climate. In southwestern Ontario winters are milder with more snow, and in summer the cooling effect of the lakes is well illustrated by the number of resorts along their shores. On the east coast, the Atlantic Ocean has considerable effect on the immediate coastal area where temperatures are modified and conditions made more humid when the winds blow inland from the ocean.

Table 1.7 gives temperature and precipitation data for typical stations in the various regions of Canada. Temperatures refer to observations taken in a thermometer shelter which has been placed in a representative location with the thermometer bulbs four feet above the surface of the ground. Mean January and July temperature data are based on records over the 30-year period from 1941 to 1970 except for far northern stations where the available period of record is shorter. After an average temperature is obtained for each day in January over a 30-year period, the mean January temperature may be arrived at by striking a mean of these 930 daily values. The mean July temperature may be obtained in a similar manner. The highest and lowest temperatures on record refer to the absolute extremes for the entire period of record at each station. Average dates are shown for the last occurrence in spring of a temperature of 32°F or lower and for the first occurrence in autumn of freezing temperatures at the four-foot level in the thermometer shelter.

The official Canadian rain gauge is a small cylinder in which the rain is caught and then measured to one hundredth of an inch with a simple measuring device. Freshly fallen snow is measured as it lies on the ground and recorded to the tenth of an inch. Total precipitation values shown in Table 1.7 are the sum of the total rainfall plus one tenth of the snowfall except that at airports the actual water equivalent of the snow has been measured since about 1960 in a specially designed gauge. For the purposes of this Table, a day with precipitation is one on which at least one hundredth of an inch of rain or one tenth of an inch of snow has fallen.

1.3.2 Meteorology

Meteorology, the science of the atmosphere, includes studies of the physics, chemistry and dynamics of the atmosphere and also investigates the direct effect of the atmosphere on the earth's surface, the ocean and life in general.

The federal government has been continuously involved in providing meteorological services to Canadians for over a century. The Atmospheric Environment Service is the scientific service-oriented organization which seeks to stimulate the application of meteorology to meet national needs and, through employment of new scientific knowledge and technological advances, to develop, expand and improve Canadian meteorological services to meet changing requirements for these services. The most rapid growth of meteorology in Canada was closely linked to the growth in aviation, both civil and military, during the period 1935-60. In more recent years, other sectors of the Canadian economy — industry, including agriculture, utilities, tourism, recreation and environmental problems are claiming greater attention.

The headquarters of the Service is located at Toronto. Services provided to meet civil requirements throughout Canada are largely decentralized to regional offices located at Vancouver, Edmonton, Winnipeg, Toronto, Montreal and Moncton. Each region operates several categories of offices with assigned levels of responsibility for providing weather services for the general public with additional specialized services for groups and agencies concerned with aviation, water resources, forestry, agriculture, road and rail transportation, construction and marine services.

Scientific Support Services groups have been established recently at regional offices which are capable of examining in detail the effects of weather on the activities of major sectors of the economy and of developing specialized services that might be required. For example, in British Columbia, provincial authorities and the regional office in Vancouver have worked together to arrange programs of considerable provincial importance, including the establishment of rain and snow gauge networks for hydrology studies, support for the Columbia River control system, provision of forest fire danger and slash-burning forecasts, and the provision of a frost-warning service for the fruit growing areas of the interior.

In general the weather information provided deals with current weather, expected weather and past weather in historical and statistical form. Current weather information takes

the form of hourly reports of local weather as observed at official observing sites across the country. These reports, which include temperature, humidity, cloud cover, precipitation and wind speed and direction, are of particular importance to those concerned with activities such as aviation, flood forecasting, shipping, snow removal and recreation. Daily values of temperature extremes and precipitation are also available.

Expected weather information is provided in the form of general long-range and short-range forecasts for most parts of Canada, with specific forecasts for aerodromes, inland water systems, fruit and vegetable growing areas and large urban centres. The routine forecast program is supplemented by a weather warning service that alerts the general public to hazardous conditions such as strong winds, heavy rain or snowfalls, severe cold or heat. Forecasts for the general public are distributed by relay to radio and TV stations and to the press by commercial channels. Forecasts are issued by 11 main weather offices and 56 secondary weather offices, which are supplied with sufficient information to enable them to meet local inquiries. A professional meteorologist is on staff at a number of secondary offices to provide a consultative service. Weather services are also available from Canadian Forces weather offices at Department of National Defence bases across the country.

The preparation of historical and statistical weather information involves the processing and storage of observed weather data to provide a historical record of the Canadian climate. Data are analyzed, quality-controlled and published in a variety of forms applicable to the special requirements of agriculture, forestry, water resources and other areas of activity. Special analytical projects requiring computer analysis of archived data are undertaken to provide advice to industry, science and government. Advisory services are available at most weather offices so that the inquirer receives the information in the form best suited to his needs.

A constant effort is made to exploit advances in meteorological science and technology in order to improve forecasting techniques and day-to-day meteorological services. Current programs and activities in research and development are discussed in Chapter 9.

Weather observing stations. Several networks of weather observing stations provide the information for the forecasts and advisory service and for the climatological and technical services referred to above. In December 1972, official meteorological observations were taken and recorded at 2,512 weather reporting stations in Canada. Stations range from 289 first order reporting stations, mainly at aerodromes, where hourly observations of all aspects of the weather are recorded, to the 2,223 co-operative observing stations where volunteer observers make daily observations of rainfall, snowfall and temperature. Although there are vast areas of the country where the weather observing stations are several hundred miles apart, the weather in the settled parts of the country is recorded hourly at first order reporting stations every 100 miles or so and daily at co-operative climatological stations about 25 miles apart.

Some 240 first order weather stations make complete weather observations every six hours and code them in a number form agreed upon by the World Meteorological Organization for international exchange. All six-hourly reports prepared in this number code are relayed almost instantaneously by the meteorological communications network to all weather offices across the country and are dispatched at high speed to other countries requiring Canadian observations. At the end of the month, all weather observing stations send their official observation report forms to a regional collection office, from which they are sent to headquarters for final quality-control, processing and publication. These data become part of the climatological archives and serve as a permanent record of Canadian weather.

Twice daily, at 35 locations throughout the country, upper air observations are made from ground level to altitudes up to 100,000 feet. Pressure, temperature and humidity measurements are made automatically by radiosonde instruments carried aloft by balloons and this information is relayed by a system of radio signals to ground receiving stations. The wind directions and speeds aloft are determined by measuring the drift of the balloon and attached radiosonde instruments using radar or radio direction equipment. The upper air observations are distributed rapidly to weather offices, and at the end of the month summary report forms are sent to headquarters where the data are quality-controlled, processed, published and stored.

Meteorological communications. The meteorological communications system provides the flow of information essential to a reliable weather information service. Since weather

conditions are constantly changing, the value of reports of weather observations falls off rapidly with time and the delay between taking the observation and its use in a forecast must be as short as possible. For a country the size of Canada with many sparsely settled areas, rapid communication presents difficult problems and requires unique solutions.

Weather offices and weather stations are linked coast-to-coast by land line teletype and, in remote northern areas, by radio or radio teletype. The land line teletype circuits are leased from commercial wire companies and operated by the Atmospheric Environment Service; most of the radio circuits are operated by the Telecommunications and Electronics Branch of the Ministry of Transport. Relay of all weather data is controlled by a centrally located computer in Toronto.

Two long-line weather facsimile networks transmit information in the form of weather charts, from central forecast offices to weather offices from coast-to-coast and into the northern and ocean areas by radio facsimile. Icebreakers and other ships equipped with receivers thus have the latest weather charts regularly available for guidance in their operations.

Specialized services. Although weather services are organized on a regional basis, certain specialized services can be most economically provided from a central location. Such a service is the ice reconnaissance and forecasting program to support marine activity in ice-congested waters; the program is directed from Toronto and the Ice Forecast Centre is located in Ottawa. Specially equipped aircraft are used in the aerial phase of the program and ice charts can be passed from the aircraft directly to icebreakers via radio facsimile. Other phases of the program are the provision of valuable supplemental data from shipboard ice observers assigned to eight Canadian Coast Guard icebreakers, and the operation of 110 ice reporting shore stations and 70 weekly reporting stations where ice thickness is measured. Forecast ice charts are dispatched via facsimile circuits and mailed to a wide variety of personnel and organizations having need of this information.

There are more than 2,000 climatological observing stations in Canada where observers record the precipitation and temperature extremes and send their climatological reports on monthly data sheets to Regional Data Collection Centres and then to headquarters. These data are frequently used in investigations of agricultural potential and irrigation, hydro-electric, industrial and other problems of a wide variety.

The Meteorological Applications Branch of the Atmospheric Environment Service in Toronto, using the computer and large banks of weather data which have been quality-controlled and stored, is able to provide the full range of relevant historic weather information to be applied to an increasingly wide variety of problems in which human, economic and physical activities and their weather-sensitive factors are being examined. Hydrometeorological specialists are responsible for meteorological studies in support of water resources activities involving the rivers, reservoirs and lakes of Canada including the provision of criteria for the proper design and operation of water-control structures, techniques for use in lake level, river flow and flood forecasting, and assistance in water supply and pollution investigations.

World meteorology. Canada has always co-operated with other nations in the exchange of weather data and other matters relating to international meteorology. A major area of international co-operation is with the United States National Weather Service which is now a part of the National Oceanic and Atmospheric Administration (NOAA). The two national meteorological organizations exchange data freely. Co-operative arrangements are also made for the use by Canada of data processed by the large NOAA computer facilities in Washington. Other agreements cover the marine forecasting program on the Great Lakes relating to standardization of methods of ship observations, criteria for issuing weather warnings and other similar matters.

World meteorology is organized on a global basis through the World Meteorological Organization (WMO) with headquarters in Geneva and a participating membership of 136 states and territories. Canada is an active member of this organization and fully supports its many goals. A major portion of the WMO technical program is now devoted to the World Weather Watch (WWW) – a world-wide plan for upgrading and modernizing meteorological observing networks and national weather services.

The opportunities afforded by the development of earth-orbiting meteorological satellites

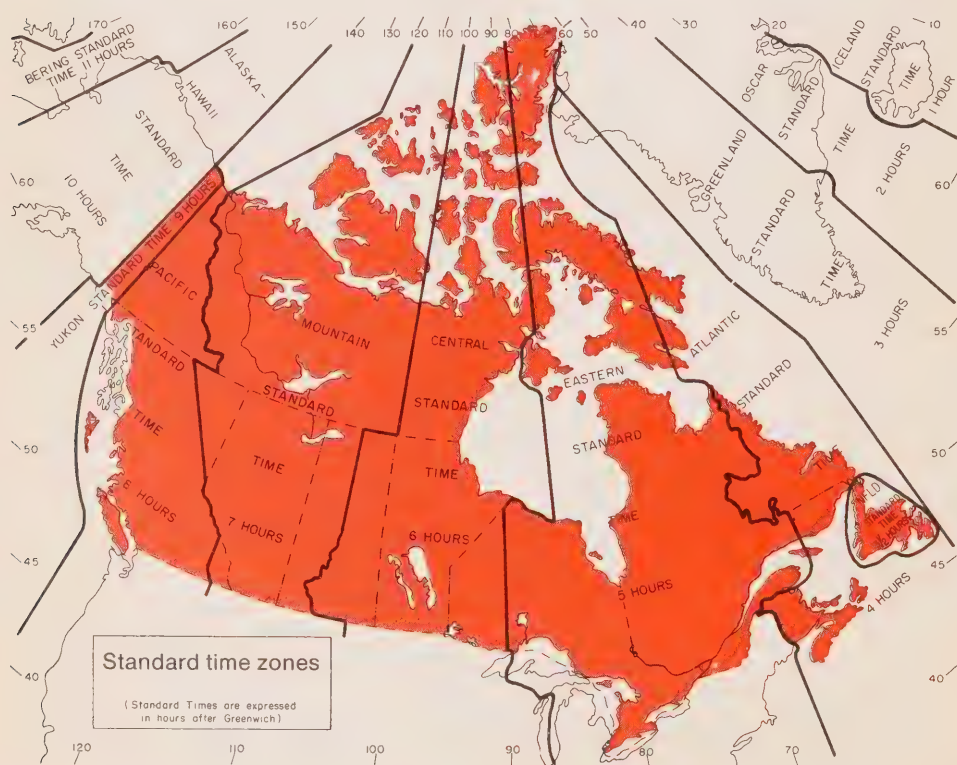
and the availability of high-speed electronic computers are being examined and both developed and developing countries are co-operating fully so that all member states of the WMO will derive full benefits from modern technology and improved meteorological services.

1.3.3 Standard time and time zones

The rotation of the earth on its axis was considered at one time to be entirely uniform and the unit of time, which is the second, was defined as $1/86400$ of the mean solar day. Improvements in clocks and in the methods of making astronomical observations demonstrated conclusively that there are irregularities in earth rotation too large to be neglected. So, in 1956 the International Committee on Weights and Measures defined the second in terms of the annual motion of the earth about the sun, called ephemeris time. In 1957 the first cesium atomic clock was calibrated with respect to ephemeris time, but not until 1967 was the cesium second adopted as the international standard. The second today is defined as 9,192,631,770 cycles of a transition of the cesium atom.

Based on atomic clocks, Canada's time is established by the National Research Council with a precision of one ten-millionth of a second per day, and co-ordination with other countries is maintained to the same precision through the *Bureau international de l'Heure* in Paris. Irregularities in the rotation of the earth give rise to a difference between mean solar time and atomic time, and leap seconds are introduced to ensure that this difference, called DUTI, does not exceed ± 0.7 seconds. At present DUTI is decreasing by about one tenth of a second per month, and positive leap seconds were necessary on June 30 and December 31, 1972.

A continuous broadcast of Canadian time is made on station CHU, Ottawa (3330 kHz, 7335 kHz, 14670 kHz), with a bilingual voice announcement each minute, and with a split pulse code to give the value of DUTI. Once a day the time signals are broadcast across Canada on the CBC networks.



Standard Time, which was adopted at a World Conference held at Washington, DC, in 1884, sets the number of time zones in the world at 24, each zone ideally extending over one twenty-fourth of the surface of the earth and including all the territory between two meridians 15° of longitude apart. In practice, the zone boundaries are quite irregular for geographic and political reasons. Universal Time (UT) is the time of the zone centred on the zero meridian through Greenwich. Each of the other time zones is a definite number of hours ahead of or behind UT to a total of 12 hours, at which limit the international date-line runs roughly north-south through the mid-Pacific.

Canada has seven time zones, the most easterly being Newfoundland Standard Time, three hours and 30 minutes behind UT, and the most westerly Yukon (west) Standard Time, nine hours behind UT. In between, from east to west, the remaining zones are called Atlantic, Eastern, Central, Mountain, Pacific and Yukon (east). Yukon (east) and Pacific Standard in effect constitute a single zone.

Legal authority for the time zones. Time in Canada has been considered a matter of provincial rather than federal jurisdiction. Each of the provinces and the Northwest Territories has enacted laws governing the standard time to be used within its boundaries. These laws determine the location of the time zone boundaries. Lines of communication, however, have sometimes caused communities near the boundary of a time zone to adopt the time of the adjacent zone, and in most cases these changes are acknowledged by amendments to provincial legislation. During the two World Wars, there were federal enactments concerning time but these were of temporary duration. In 1941 the time determined at the Dominion Observatory was designated as official time for Dominion official purposes. On April 1, 1970, this responsibility was transferred to the National Research Council.

Daylight saving time. Although Daylight Saving Time had been urged in many quarters before World War I, its first use in Canada came as a federal war measure in 1918. Today most of the provinces have legislation controlling the provincial or municipal adoption (or rejection) of Daylight Saving Time; in the other provinces the authority is left to the municipalities. By general agreement, Daylight Saving, where it is observed, is in force for six months from the last Sunday in April until the last Sunday in October.

1.4 Public land

The total area of Canada and the areas of the individual provinces and territories are classified by tenure in Table 1.8. All lands, with the exception of those privately owned or in process of alienation, are Crown lands under the jurisdiction of either the federal or the provincial governments.

Federal public land. Public lands under the administration of the federal government comprise lands in the Northwest Territories including the Arctic archipelago and the islands in Hudson Strait, Hudson Bay and James Bay, lands in Yukon Territory, ordnance and admiralty lands, national parks and national historic parks and sites, forest experiment stations, experimental farms, Indian reserves and, in general, all public lands held by the several departments of the federal government for various purposes connected with federal administration. These lands are administered under the Territorial Lands Act (RSC 1970, c.T-6) and the Public Lands Grants Act (RSC 1970, c.P-29).

The largest areas under federal jurisdiction are in the Northwest Territories and the Yukon Territory where only 93 sq miles of a total area of 1,511,979 sq miles are privately owned and 1,058 sq miles are under the administration of the territorial governments.

Provincial and territorial public land. Public lands of Nova Scotia, New Brunswick, Quebec, Ontario and British Columbia (except the Railway belt and Peace River block) have been administered since Confederation by the provincial governments. In 1930, the federal government transferred the unalienated portions of the natural resources of Manitoba, Saskatchewan and Alberta and of sections of British Columbia to the respective governments, and all unalienated lands in Newfoundland, except those administered by the federal government, became provincial public lands under the Terms of Union on March 31, 1949. All land in Prince Edward Island has been alienated except 133 sq miles under federal or provincial administration.

The transfer by the federal government of significant areas of land within and immediately surrounding established communities in the Northwest Territories and the

Yukon Territory to the administration of the respective territorial governments began in September 1970. In that year, four such transfers were completed, three in the Northwest Territories and one in the Yukon: land encompassing the city of Yellowknife (about 220 sq miles), the town of Inuvik (about 95 sq miles) and the communities of Rae-Frank Channel-Calzo (about 110 sq miles) in the Northwest Territories, and the city of Whitehorse (about 240 sq miles) in the Yukon Territory, a total of about 665 sq miles. Similar transfers will be completed during the next four years.

Information regarding provincial public lands may be obtained from the respective governments.

1.4.1 National historic parks and sites

The National Historic Parks and Sites of Canada commemorate the persons, places and events which have been declared to be of major significance in the historical development of Canada.

History. The passage of the Dominion Forest Reserves and Parks Act in 1911 was a significant milestone in the federal government's commemorative program. Prior to this date the government's involvement was through financial contributions to commemorative activities. This Act created within the Department of the Interior a Dominion Parks Board to administer national and historic parks. In 1917, Fort Anne at Annapolis Royal, NS, was transferred from the Department of the Militia and declared Canada's first national park of historic significance.

Upon the recommendation of the Commissioner of the Dominion Parks Board, a seven-member Historic Sites and Monuments Board of Canada was formed to advise the Minister on the matter of sites of national historical interest. The Board met for the first time at Ottawa on October 28, 1919.

The second national historic park was established in 1927 and by 1950 there were nine such parks, receiving over 150,000 visitors annually.

Part II of the National Parks Act of 1930 provided that the Governor in Council may set apart any land, the title to which is vested in Her Majesty as a national historic park to (a) commemorate a historic event of national importance, or (b) preserve any historic landmark, or any object of historic, prehistoric, or scientific interest of national importance, and may from time to time make any changes in the area to set apart that which he may consider expedient.

Until 1953 the Historic Sites and Monuments Board of Canada operated under Order in Council authority and no provision was made for Parliament's formal review of the Board's decisions. The Historic Sites and Monuments Act of 1953 provided the statutory base for the operation of the Board for the first time. The significant change brought about by the Act was the definition of the role of the Board as adviser to the Minister whose statutory responsibility it became to develop and implement a national program of commemorating historic sites. Further legislation was enacted in 1955 and 1959 to amend and broaden the scope of the original Act.

The Canadian Historic Sites Division, later renamed the National Historic Sites Service (NHSS), was created within the National and Historic Parks Branch of the Department of Northern Affairs and National Resources in 1955 to develop, interpret, operate and maintain historic parks and sites and to act as secretariat for the Board.

Policy. A policy statement on national historic sites was tabled in the House of Commons in 1968 by the Minister of Indian Affairs and Northern Development on the recommendation of the Historic Sites and Monuments Board of Canada. Among other things, the policy elaborated the criteria for the designation of national historic sites for the benefit of Parliament and the public.

For commemoration, a site or structure must be closely associated with a person, place or event of national historical importance, or it must illustrate the cultural, social, political, economic or military patterns of history or of a prehistoric people or archaeological discovery, or be valuable as an example of architecture.

The policy statement also included guidelines for the provision of visitor services, interpretative programs and the promotion of information to the public at large. Standards for

the preservation, restoration and reconstruction of structures were established which stressed authenticity in the materials used and in the furnishings and artifacts. The policy also recognized the need for a comprehensive program to give full thematic and geographical representation and to establish a long-range planning program to facilitate the development of parks based on such themes as exploration and social, cultural, economic and prehistoric events.

Advisers. The Historic Sites and Monuments Board of Canada has 15 members: two representatives each from Ontario and Quebec and one from each of the eight other provinces, a representative from the National Museums of Canada, a representative of the Department of Indian Affairs and Northern Development and the Dominion Archivist (ex officio). The members are generally historians or archivists of considerable distinction.

In advising the Minister on the commemoration of places, persons and events of national historical importance, the Board may recommend that sites, buildings and other structures of national importance be developed as national historic parks or historic sites or that commemoration be carried out by the erection of Historic Sites and Monuments Board of Canada plaques, or in exceptional circumstances, of distinctive monuments.

Suggestions for the establishment of historic sites and parks come from many sources — the general public, members of Parliament, historical societies and other groups, department staff and members of the Board themselves.

Before a site is referred to the Board for consideration, a background paper is prepared by Historic Sites Service research staff. The Board then determines the significance of the site and makes its recommendation, which may be either favourable or unfavourable, to the Minister. After ministerial approval has been granted to a project, a development plan is prepared.

Administration. Operational responsibility for the development and maintenance of new and existing parks and sites has been decentralized to five National and Historic Parks Branch regional offices located in Halifax (for the four Atlantic Provinces), Quebec City (for Quebec and Baffin Island), Cornwall (for Ontario), Winnipeg (for Manitoba, Saskatchewan, part of northern Alberta, the Yukon Territory and Northwest Territories, except Baffin Island), Calgary (for the southern part of Alberta, containing the Rocky Mountain Parks, and British Columbia).

The Historical Research Section of the Research Division carries out documentary research as a basis for the interpretation of parks and sites and for the guidance of archaeological activities. The Archaeological Research Section produces information for site development on the basis of field investigation and laboratory analysis and an underwater research program.

The Canadian Inventory of Historic Building is the main program of the Architectural History Section. The Inventory, begun in 1970, is a computerized screening program to survey, analyze and categorize the surviving old buildings in Canada. So far the exteriors of 95,000 buildings have been surveyed.

The Operations Policy Division is responsible for implementing and co-ordinating projects selected for commemoration and preservation. Some of the responsibilities include planning of existing and potential national historic parks and sites, designing exhibits and displays, the acquisition, restoration and conservation of military and domestic furnishings for use in parks and sites and the provision of visitor services.

Parks and sites. Since its establishment the NHSS, on the recommendation of the Board, has been instrumental in the creation of more than 70 historic parks and major sites and in the commemoration of some 650 persons and events of national (as opposed to local or regional) significance. Negotiations are being conducted with certain provinces for the acquisition of other sites already declared to be of major national historical significance. The Department has also entered into cost-sharing agreements with provincial and municipal governments and with incorporated non-profit societies for the acquisition and restoration of more than 30 architecturally or historically significant buildings on the understanding that the other party will pay the balance of the acquisition and restoration costs and will maintain the buildings in perpetuity. More than 30 monuments of distinctive nature and character which commemorate people and events significant in the nation's history are maintained by the NHSS.

A very important step toward the preservation of the nation's historic resources was taken in 1972 when the Minister of Indian Affairs and Northern Development announced the establishment of a form of National Trust in Canada, similar to those in Britain and the US, called Heritage Canada. Heritage Canada will be concerned with the conservation of buildings, sites, natural and scenic areas of importance to the country's heritage, and will receive an initial federal capital endowment of \$12 million; the interest on this fund will be used to further its work. It will seek to enlist the support of the general public and of foundations and corporations; membership will be open to anyone.

Location, year established and characteristics of national historic parks and sites were carried in the 1972 *Canada Year Book*, pp. 62-63. Eighteen more sites are described here. Many more are in process of restoration or development and full details may be obtained from the Department of Indian Affairs and Northern Development's publication *National historic parks/sites*.

Cape Spear, Nfld., eight miles south of St. John's. 1968. Most easterly point North American continent. Stabilized very early lighthouse, World War II heavy coastal defence gun battery.

Fort Amherst, Rocky Point across Harbour, Charlottetown. 1967. Remains 1758 earthworks British fortification. Modern visitor reception/interpretation centre. Large area landscaped grounds, ground interpretation signs.

Montmorency Park, Quebec City. Landscaped park, contains restored remains of fortification walls with period artillery pieces in place. Named after Msgr. de Laval de Montmorency.

Chateauguay, Chateauguay, Que. 1929. Site of Battle of Chateauguay Forks 1813. Monument on site.

Rainbow Bridge, Niagara Falls, Ont. Located in building at Canadian end of Rainbow Bridge, didactic interpretative display; theme: national and provincial historic sites in Ontario.

Rideau Canal General, Ottawa to Kingston. 1972. Constructed 1828-1832 British military engineers under Col. By, 123 miles in length, 41 locks. Now used as recreational waterway, Kingston to Rideau Lakes/River system to Ottawa River.

Jones Falls, Ont. 1972. Massive stone masonry dam, four locks, on Rideau Canal system, remains of defensible canalman's residence.

Merrickville, Ont. 1972. Masonry dam, three locks, stabilized masonry and timber defensive blockhouse which houses local historical museum.

Narrows, Crosby, Ont. 1972. One lock, between upper and lower Rideau Lakes; preserved masonry and timber defensible blockhouse.

Newboro Locks, Ont. 1972. One lock, stabilized masonry and timber defensible blockhouse.

Kingston Mills, Ont. 1972. Two locks, preserved masonry and timber defensible blockhouse.

Ottawa, Rideau Canal System. 1972. Eight flight locks, preserved/restored; old Commissariat structure houses local Colonel By museum.

Fort St. Joseph, St. Joseph Island, west end North Channel Lake Huron, Ont. 1928. Few remains of British earthworks and masonry fort, built 1796; served the fur trade and as Indian agency; destroyed by Americans 1814.

Battle of the Windmill, Prescott, Ont. 1923. Wind-operated gristmill built circa 1828. Structure stabilized and preserved, now used as lighthouse navigational aid; site of battle 1837-38 rebellion in Upper Canada; site may be visited but structure not open to public.

S.S. Keno, Dawson City, YT. 1962. Preserved Yukon river boat; stern-wheeler maintained and interpreted to illustrate early 20th century northern river transport; set in cradles on land in winter storage position.

Palace Grand Theatre, Dawson City, YT. 1962. Restored and reconstructed theatre first built and finished to "grand" scale circa 1900, interpreted to illustrate Gold Rush days entertainment features; active live theatre during visitor season.

S.S. Klondike, Whitehorse, YT. 1971. Large sternwheeler, flat bottomed Yukon river boat, to be laid up in cradles in winter storage position. To be restored to working day configuration and to be focal point of interpretative display with theme of water-borne transportation.

Bonanza Creek, near Dawson City, YT. Site of first claim staked in Klondike Gold Rush 1897-98; interpretation to illustrate evolution of placer mining techniques.

1.4.2 National parks

Canada's national parks are the visible evidence of the federal government's efforts to preserve natural areas of outstanding scenic and biological interest for the benefit of the public. The national park concept, which began with the establishment of Yellowstone National Park in the United States in 1872, was soon afterwards applied in Canada. In 1885, the Canadian government reserved from private ownership the mineral hot springs of Sulphur Mountain in what is now Banff National Park. Two years later, this ten-sq-mile reserve was extended to 200 sq miles and named Rocky Mountains Park, the first federal park in Canada. In the same year, Queen Victoria Niagara Falls Park, the first provincial park, was established by the Ontario government to protect the public's right to view the great natural wonder of Niagara Falls. Two land reserves in southern British Columbia – Yoho and Glacier – were made by the federal government in 1886, a reserve of 54 sq miles in the Waterton Lakes area of southern Alberta in 1895, and an area of 5,000 sq miles around Jasper, Alta., in 1907. These four reserves, all in the western mountain ranges, together with Rocky Mountains Park, formed the nucleus of the national park system after the Dominion Forest Reserves and Parks Act was passed by Parliament in May 1911. Concurrently, a distinct National Parks Branch was created in the federal government to protect, administer and develop the parks.

National parks are now under the jurisdiction of the Minister of Indian Affairs and Northern Development and are administered by the National and Historic Parks Branch under the National Parks Act, 1930 (RSC 1970, c.N-13) and various park regulations. The purpose of the parks and the objectives of their management are set out in the Act, which dedicates the parks to the people of Canada for their "benefit, education and enjoyment" and states that they are to be maintained and used so as to leave them unimpaired for the enjoyment of future generations.

By 1930, nine more national parks had been established. Three of these were in Ontario and consisted of federally owned Crown land or land held in trust for Indians – St. Lawrence Islands National Park (1914), Point Pelee National Park (1918) and Georgian Bay Islands National Park (1929). One in Saskatchewan – Prince Albert National Park (1927), and one in Manitoba – Riding Mountain National Park (1929), were former federal forest reserves. Elk Island National Park near Edmonton was established in 1913 as a preserve for buffalo and in 1922 Wood Buffalo National Park, a 17,300-sq-mile area straddling the Alberta - Northwest Territories border, was established as a refuge for the largest surviving herd of buffalo in North America. In British Columbia, through agreement between federal and provincial governments, two scenic areas were established as national parks – Mount Revelstoke National Park (1914) and Kootenay National Park (1920).

Between 1930 and 1972, the following were added to the chain of Canada's national parks: Northwest Territories – Nahanni (1972) and Baffin Island (1972); Yukon Territory – Kluane (1972); British Columbia – Pacific Rim (1970); Ontario – Pukaskwa (1971); Quebec – La Mauricie (1970) and Forillon (1970); New Brunswick – Kouchibouguac (1969) and Fundy (1947); Nova Scotia – Cape Breton Highlands (1936) and Kejimikujik (1968); Prince Edward Island – Prince Edward Island National Park (1937); Newfoundland – Terra Nova (1957) and Gros Morne (1970).

In the case of parks in the Yukon Territory and Northwest Territories, lands have been reserved from all alternative disposition by Order in Council. Within provinces, land is acquired by the province acting within a federal-provincial agreement to establish a national park. These lands are transferred to Canada and the establishment of the park is formalized by Parliament, adding the boundary description in a schedule to the National Parks Act.

In 1971 *The national parks system planning manual* was published, in recognition that new and comprehensive measures are needed to preserve Canada's natural heritage. With a view to protecting not only unique and outstanding areas of the Canadian landscape, but also those representative of its physical and biological characteristics, 41 distinctive natural regions were identified within which natural history themes have been defined.

The establishment of four new parks representing several of these natural regions, which was announced in 1972, brought the total number of parks to 28. Encompassing 49,900 sq miles the system is now the largest and most rapidly expanding in the world. It is intended that there will be 40 to 60 national parks in Canada's national parks system by the year 2000.

A detailed list of national parks was included in the 1972 *Canada Year Book*, pp. 60-62.

The location and characteristics of three parks established in 1972 are as follows:

Kluane, southwestern region of Yukon Territory, 8,500 sq miles. Canada's highest mountains, most extensive icefields and glaciers, fine wildlife populations; accessible by highway.

Nahanni, southwestern region of Northwest Territories, 1,840 sq miles. Wilderness area including South Nahanni River; three deep canyons and spectacular Virginia Waterfall, numerous hot springs, interesting flora; not yet accessible by highway.

Baffin Island, on Cumberland Peninsula of Baffin Island, 8,290 sq miles. Scenic area with fjords and deeply carved mountains; numerous glaciers extend from Penny Ice Cap (second largest icefield in world); interesting wildlife; not accessible by highway.

A location map and details of these parks is available in *Canada's national parks* published by the Department of Indian Affairs and Northern Development.

An important step in the evolution of national park administration was taken when all policies concerning the parks were reviewed, amended and consolidated in a statement that was approved by the federal government and announced in the House of Commons on September 18, 1964. Following are the main points of this policy statement, which will guide administration and provide objectives for planning and development.

(1) National parks are established to preserve for all time the most outstanding and unique natural features of Canada for the benefit, education and enjoyment of Canadians as part of their natural heritage. They are dedicated forever to one use — to serve as sanctuaries of nature for rest, relaxation and enjoyment. No exploitation of resources for any other purpose is permitted. All development must contribute to public enjoyment and conservation of the parks in a natural condition.

(2) Zoning will be used to guide development and to preserve park values. Visitor services will be grouped generally into visitor service centres, a definition that applies to existing town sites.

(3) National parks cannot meet every recreational need; the most appropriate uses are those involving enjoyment of nature and activities and experiences related to the natural scene.

(4) The federal government assumes the cost of administration and protection in the parks and provides basic facilities for public use, such as roads, trails, campgrounds, picnic areas, nature interpretation and utilities. Other facilities beyond basic requirements, such as hotels, motels, restaurants, gas stations, stores and other special services, are provided by private enterprise.

(5) Park residents and businesses should be in the same economic position as those operating outside the national parks and this principle governs the approach to charges, rentals and fees. The users of special services such as swimming pools, marinas, golf courses and fully serviced campgrounds should pay the operation and maintenance costs of these publicly operated facilities. In general, permanent and seasonal residents should be limited to persons providing basic services to the park community.

(6) All decisions affecting public development and the activities of private enterprise must be governed by the national interest as expressed by the National Parks Act.

The National Parks and National Historic Parks and Sites are administered by the five regional directors who are responsible for operations in the Western Region (Alberta and British Columbia), Prairie Region (Manitoba, Saskatchewan, Yukon Territory and Northwest Territories), Ontario Region, Quebec Region (plus the new Baffin Island National Park), and the Atlantic Region which includes the Maritime Provinces and Newfoundland. A resident superintendent manages each park and has the assistance of a staff of wardens who protect the park and its natural features and enforce regulations, naturalists who explain the park to visitors and offer various educational services, and other administrative, maintenance, and visitor service personnel. A somewhat similar organizational structure exists on a smaller scale in each national historic park.

There are campgrounds in most parks; daily charges are \$2.00, \$3.00 or \$4.00, depending on services provided.

There is free entry to some parks, including those in the Atlantic Provinces. A \$1.00 permit is valid from a day to a year in Elk Island, Prince Albert, Riding Mountain and St. Lawrence Islands National Parks. The \$2.00 annual fee charged for most western parks permits entry to all parks except Point Pelee National Park in Ontario for which the \$5.00 annual licence includes complimentary use of the park's transit system. Trailer fees vary from 50 cents per day to a \$1.00 annual permit, valid in all national parks.

Each park is developed to yield the recreational/conservational potential for which it is suited. Sightseeing, camping, fishing, hiking, photography and nature study are the most popular forms of recreation common to the parks now accessible to the public. A program was initiated in 1970 to encourage national, provincial and local associations and private citizens to

express their views at special public hearings on development plans for specific parks.

In order to accommodate the increasing number of visitors to Canada's national parks and to include representative and rare examples of the Canadian landscape, Canada's national park system has, in the past few years, expanded more than at any other time in its history.

In 88 years, through co-operation between provincial and territorial governments, Canada's national park system has grown to become the world's largest. In 1972, 15 million persons visited the parks.

To ensure that natural areas are protected and man's endeavours are recognized and interpreted for future generations, the National and Historic Parks Branch of the Department of Indian Affairs and Northern Development is extending its program of National and Historic Parks and Sites in four new directions — canal systems, national marine parks, national landmarks, and wild rivers.

Canal systems. Eight historic canals and waterways in Ontario, Quebec and Nova Scotia will be developed for natural and historic significance. These canals not only provide a broad spectrum of water recreation activities, but give interesting insights into Canada's early years when they were important transportation links.

In Ontario, the 240-mile Trent-Severn Canal links Lake Ontario to Georgian Bay with 43 locks, one marine railway, 33 miles of artificial canal channels and 207 scenic miles of lake and river channels. Navigation time through each lock is 15 to 20 minutes. The 125-mile Rideau Canal connecting Kingston to Ottawa winds through a section of the beautiful Rideau Lakes region. There are 47 locks. Passage time through each is 10 to 15 minutes. Twelve miles of the waterway is artificial canal, while the remainder of the route uses lake and river channels.

In the Quebec system are the 45-mile Richelieu River route connecting Lake St. Peter with Lake Champlain, which includes nine locks in the 12-mile Chambly Canal and the St. Ours Lock, and the Ottawa River route which includes the Carillon and Ste. Anne locks. On Cape Breton Island, the half-mile St. Peters Canal runs from Bras d'Or Lakes to the Atlantic Ocean.

National marine parks. Canada is bounded by three oceans and more than 150,000 miles of coastline. It also has the largest volume of fresh water in the world. The national parks system will be extended to include representations of the Pacific, Arctic and Atlantic coasts and inland waters, with identification of Marine Natural Regions and Marine Natural History Themes. Development of a National Marine Park in the Georgia Strait is under consideration, and eight other regions offer immense possibilities to enjoy and interpret marine areas.

National landmarks. Preservation of specific natural wonders, such as the Chub crater in northern Quebec, the frozen pingoes of the Arctic, semi-desert and eroded hills of the Prairies and mountain caves and sea-scapes, would allow on-site interpretation of Canada's natural evolution.

Wild rivers. Many undeveloped Canadian rivers — some with historic appeal — are being surveyed as potential wilderness routes.

Historic waterways, land trails and scenic parkways. In addition to canals, marine parks, landmarks and wild rivers, the National and Historic Parks Branch plans three other areas of development in its Byways and Special Places program, encouraging Canadians to embark on "journeys of discovery". Historic water routes, which will include the historic canals, will be developed in co-operation with provincial governments, opening systems of historic waterways across the nation. Historic land trails will be developed for the hiker, horse rider, cyclist, and cross-country skier in co-operation with the provinces and municipalities. Both of these developments will link history with leisure, providing further access to our human heritage. Scenic parkways will lure motorists from super highways to leisurely drives throughout the countryside. These routes would provide access to nature trails, picnic sites, campgrounds, historic sites and, where possible, national and provincial parks.

Gatineau Park. In addition to the national parks described above, there is a 138-sq-mile recreation area known as Gatineau Park north of the cities of Ottawa and Hull. Although not designated as a national park, this area is being developed by the federal government as part of the National Capital Region and is under the care of the National Capital Commission. It is a wilderness area of great potential, extending northward from Hull for 35 miles. It now has 25 miles of parkway, magnificent lookouts, lakes, fishing streams, beaches, picnic areas, camping

sites and walking trails and is already one of the finest recreation areas in Canada, enjoyed by nearly 1.8 million visitors each year. A master plan for its further development is under way.

1.4.3 Provincial parks

Most of the provincial governments of Canada have established parks within their boundaries. Some of these, particularly in Quebec and Ontario, are wilderness areas set aside in order that some portions of the country might be retained in their natural state without change brought about by the hand of man. Most of them, however, are smaller areas of exceptional scenic or other interest which are easily accessible and are equipped or slated for future development as recreational parks with camping and picnic facilities. The more important parks in each province are mentioned briefly in the following paragraphs.

Newfoundland. Altogether, 3,151 sq miles of wilderness, reservation, park lands and public beaches are administered by provincial government agencies. Of this land, 2,785 sq miles are contained within two wilderness areas administered by the Wildlife Division of the Department of Tourism. The remaining 366 sq miles of development and reserved public park land are under the jurisdiction of the Provincial Parks Division of the Department of Tourism. Of that area, 106 sq miles are in 46 developed provincial parks; two sq miles in protected public beaches; and 258 sq miles in 16 provincial park reserves. Operation of these parks is directed toward preservation of the natural environment and most of them are located in wilderness areas, developed only for picnicking and camping. Regulations prohibit hunting and other types of resource exploitation; sports fishing, however, is encouraged. There is a continuing upward trend in the number of park users, both in day-use and overnight areas.

Prince Edward Island. Twenty areas have been developed as provincial parks including Strathgartney Park, a 40-acre tract of land on the Trans-Canada Highway between Charlottetown and Borden, which is an excellent picnic site and campground with its hardwood groves, fresh spring water and beautiful view over the West River and the surrounding country; Lord Selkirk Park, an area of 30 acres at Eldon, is of historic interest in that it contains an old French cemetery and marks the spot on the shoreline where Lord Selkirk landed; Brudenell River Park and Golf Course, comprising 296 acres at Roseneath, has a considerable area of woodland and runs to the shore of the Brudenell River; Jacques Cartier Park, an area of 22 acres at Kildare Beach four miles from Alberton, is of historic significance as the place where Jacques Cartier first landed on Prince Edward Island; Green Park, 45 acres on the Trout River, is an attractive combination of land, trees and water and is also of interest as a historic shipbuilding centre; Cabot Park at Malpeque, named in honour of the famous explorer, John Cabot, is a 54-acre area with beautiful sandy beaches and an interesting museum; and several small parks have been developed or are under development. A fee of \$4.00 is charged for serviced tent and trailer sites and of \$3.00 for unserviced sites. The parks are maintained by the Department of the Environment and Tourism.

Nova Scotia. The provincial park system, which is administered by the Department of Lands and Forests, consists of 17 overnight campground parks, 46 day-use picnic parks and seven day-use beach parks. Campground parks are located near the major highways throughout the province, and are designed to provide overnight camping accommodations; however, they usually contain a day-use picnic ground as well. They vary in size from 65 to 1,200 acres, and have from 30 to 175 campsites. Basic facilities include potable water, vault toilets and picnic tables. There are no service hook-ups. Picnic parks are designed as roadside day-use rest areas, and are located at 20- to 40-mile intervals along major highways (other than on controlled access routes). They vary in size from less than one acre to more than 200 acres and are provided with basic facilities similar to those in campground parks. Day-use beach parks are designed to serve as recreational areas, and are provided with picnic tables, potable water, vault toilets, and change houses. Additional good quality beaches are being developed, dependent upon demand and location. The overnight camping fee is \$2.50 per party per night. There are no vehicle entry permits or day-use fees. The provincial park system provides about 10% of the total number of campsites in the province, with the national park system providing about 15% and the private sector the remaining 75%.

New Brunswick. The New Brunswick provincial park system, which is administered by the Department of Tourism, includes 24 recreational parks ranging in size from 25 to 1,400 acres, 26 picnic-ground parks, 11 campground parks, eight beach parks, a marine park and a resource

park. Most of the park sites are located in rural areas, fairly evenly distributed throughout the province, and are adjacent to or easily accessible from main trunk roads. All parks contain tables, some form of toilet facility and a potable water supply, but more elaborate facilities are available in the larger parks. A vehicle fee is charged at some parks and a daily camping fee of \$2.00 to \$2.50 is in effect at 25 of the larger parks, subject to change without notice. The Department also maintains a wildlife park at Woolastook near Fredericton where various species of wildlife to be found in the province are displayed. In 1971, almost 3.8 million persons visited the provincial parks, 203,000 of them campers; 75% of the campers using park sites came from outside the province. Several parks have organized activity programs and supervised swimming with qualified life-guards. Mactaquac, near Fredericton, one of two year-round parks boasts a championship 18-hole, 7,030-yard golf course, two marinas, and an interpretative program with naturalists on staff. During the winter there are facilities for snowmobiling, cross-country skiing, snowshoeing, tobogganing, skating, sleigh rides and camping. Sugarloaf, near Campbellton, the other year-round park features an alpine ski hill with three lifts, cross-country skiing, snowmobiling and tobogganing. In the past few years services on the 54,000 acres of parkland New Brunswick maintains have been expanded and improved so that the visitor is offered a full and versatile recreational program.

Quebec. The major parks in Quebec extend over almost 75,000 sq miles, about 13% of the area of the province. Excluding James Bay Park, they cover nearly 20% of the forest area south of the 52nd parallel. There are 30 major parks, the oldest of which are Mont-Tremblant Park, 80 miles north of Montreal, dating back to 1894 and Laurentide Park, 30 miles north of Quebec City, to 1895. The former covers 990 sq miles, and the latter 4,059 sq miles. Gaspé Park, an area of 498 sq miles, was established in 1937 chiefly to protect the caribou, then threatened by extinction; a herd of caribou can now be found on Mount Albert. The same concern for the future of these animals prompted the creation of Laurentide Park in 1895. Unfortunately, in spite of the protection afforded, the caribou eventually disappeared; however, they have since been successfully re-introduced. La Vérendrye Park, 140 miles northwest of Montreal, was created in 1939 as the Mont Laurier - Senneterre Highway Fish and Game Reserve. In 1950, the Quebec government gave the territory its present name in honour of the famous Canadian explorer, Pierre Gaultier de Varennes, Sieur de La Vérendrye, who discovered the Rocky Mountains. This vast and open area of wilderness now extends over 5,257 sq miles. In 1938, an Act provided for the creation of Mont-Orford Park, west of Sherbrooke. Although much smaller in size, only 15 sq miles, this regional park is a recreation-intensive ground where camping is very popular. Since then, more than 20 parks have been successively created, the major ones being: Chibougamau, Port-Daniel, Mistassini, Rimouski, Matane, St. Maurice, Port-Cartier - Sept-Îles, Portneuf, Mastigouche, Joliette and Labelle. These parks are administered directly by the Parks Branch of the Department of Tourism, Fish and Game.

As far as open-air recreation is concerned, fishing has always been the most popular activity in Quebec parks. In 1971, the Department of Tourism, Fish and Game established three new parks — Mastigouche, Joliette and Labelle — to allow access to many lakes and rivers in the proximity of large urban centres. Papineau Park, created in 1965, was also made accessible to a larger public when it was formed into the double Papineau - Labelle Park. To allow as many as possible to use these new facilities, fishing "by the day" was instituted, whereby anglers may reserve an area for one day at a time; reservations may be made 48 hours in advance on a first-come, first-served basis by phoning the park reception centres. The Quebec government has also set aside several rivers as fishing reserves for public use, including the St. Jean, Petite Cascapédia, Matapédia, Ste. Anne, Cap Chat and Matane Rivers in the Gaspé area, the Moisie and Laval Rivers on the north shore of the St. Lawrence, and the Petit Saguenay, a tributary of the Saguenay River. Salmon is the principal catch. Hunting was generally prohibited in the parks until 1962. Moose hunting for wildlife-management purposes is now allowed, for Quebec residents only, in the following parks: Laurentide, La Vérendrye, Matane, Portneuf, Mont-Tremblant, St. Maurice, Haute-Mauricie and Dunières. Hunting is permitted in Rimouski Park under certain conditions. In 1972, small game hunting was also permitted in Papineau - Labelle, Mastigouche, Joliette, Portneuf and St. Maurice Parks.

The growing popularity of camping by the local population and visitors to Quebec has led the Parks Branch to increase the number of campsites as a supplement to the network of

privately operated sites. In eastern Quebec, provincial campsites are located at Carleton, Port-Daniel, Moisie, Mont St. Pierre, Percé and Trois-Pistoles; at Îles-de-la-Madeleine, there are camping grounds at Grande-Entrée and Gros-Cap. Closer to Quebec City are St. Alexandre (Kamouraska), Montmagny, St. Jean (Île d'Orléans), Stoneham, Villeneuve, Vincennes (Beaumont), and St. Joseph (Beauce). More or less surrounding Metropolitan Montreal are Mont-Orford, des Voltigeurs (Drummondville), Côte-Sainte-Catherine, Paul-Sauvé (Oka), Dollard-des-Ormeaux, Pointe-des-Cascades, Coteau-Landing and Sainte-Véronique.

To meet the need of snowmobilers the government, during the winter of 1971-72, provided safe and attractive trails in several parks, especially Laurentide, Portneuf, St. Maurice, Paul-Sauvé (Oka), Mont-Tremblant, Joliette and Mastigouche. Cross-country skiing has become a favourite sport especially for families and groups of friends. The Parks Branch laid out trails in some parks, particularly in the Mercier Camp area of Laurentide Park where heated facilities were installed. Trails are well marked and of various lengths and degrees of difficulty. Mont-Orford, Mont-Tremblant and Paul-Sauvé parks also received large numbers of cross-country skiing and snowshoeing enthusiasts.

Ontario. In 1971, 113 provincial parks were available for public use in Ontario and several new parks were in process of development; 99 other areas, comprising 1,909 sq miles, were held in reserve for future development. The total area of the Ontario provincial park system was about 16,067 sq miles. The parklands are administered by the Parks Division of the Ministry of Natural Resources. The seven largest parks — Polar Bear, Algonquin, Quetico, Lake Superior, Missinaibi, Killarney and Sibley — together have an area of about 12,725 sq miles. Polar Bear Park is the largest in the system, occupying 7,000 sq miles of Hudson Bay Lowland bordering Hudson and James bays containing boreal forest, tundra and arctic flora and fauna. Algonquin Park is a beautiful area 2,910 sq miles in extent, 180 miles north of Toronto and 105 miles west of Ottawa; it has 14 picnic and camping areas which are accessible by car from Highway 60 and offers particularly fine canoeing opportunities in its interior. Killarney Park is accessible by Highway 637 from Highway 69 south of Sudbury. Quetico Park, covering 1,750 sq miles, is accessible by Highway 11 at the Dawson Trail Campground on French Lake and also by water by way of Basswood Lake in the south. Highway 17 north from Sault Ste. Marie gives access to Lake Superior Park, and Sibley Park may be reached by road from Highway 17 east from Thunder Bay. Missinaibi Park, 176 sq miles in extent, surrounds Missinaibi Lake, 55 miles north of Chapleau. The lake is renowned for walleye fishing and is the site of an important Hudson Bay trading post.

Under the Wilderness Areas Act of 1959, 40 areas have been established, widely distributed across the province. They vary in size, character and significance but all were established as being important for their historic, scientific, aesthetic or cultural values. The largest is a 938-sq-mile block covering the Pukaskwa area on the north shore of Lake Superior. Most other wilderness areas are one sq mile or less in size.

In 1967 a policy of park classification and parkland zoning was established to achieve a balanced park system and to provide a framework for positive and effective development and management. Five park classes were established — primitive, natural environment or heritage, wild river, nature reserve, and recreation. Comparable zones within parks were also established — primitive, natural, historic, multiple use, and recreation. Some areas once protected under the Wilderness Areas Act for their scientific values are being changed in law to be protected as nature reserves under the Provincial Parks Act. There are now six nature reserves, four of which were previously under the Wilderness Areas Act. All nature reserves contain natural features and phenomena that are either unique or typical of the primitive or contemporary landscapes which together form the ecological mosaic of Ontario. By the end of 1970, there were five wild river parks in existence, three of which, all located in the central section of northern Ontario, were established during the year: Mississagi, Chapleau - Nemegosenda and Lady Evelyn.

To meet the rising pressures for recreational space Ontario created the North Georgian Bay Recreational Reserve which covers 4,500 sq miles of interesting country lying generally between Algoma and Parry Sound on the north shore of Georgian Bay and includes the channel between Manitoulin Island and the mainland, the 30,000 islands, the famous route of the voyageurs by way of the French River, the remaining shoreline of Lake Nipissing and the La Cloche Mountains. The Reserve is not a provincial park nor is it a Wilderness Area but an

area following a normal course of development which is already used extensively for recreation. The plan is, by guiding the evolution of the area, to realize its full potential as a recreational paradise serving all types of needs and co-existing with a landscape of normal activity.

Ontario's vast lakeland areas make this province a vacation paradise and the number of park visitors increases year by year. In 1971, 13,658,619 persons attended, of whom 1,502,216 were campers making use of the 18,941 campsites provided for them. The charge for vehicle entry in 1971 was \$1.50 per day or \$15 per year, and the camping charge was \$3.50 per night which included vehicle entry. Picnic tables, fireplaces, fuelwood, tested drinking water and washrooms are provided at supervised tent and trailer campgrounds and all parks have trailer sanitation stations. Interpretative and naturalist programs are being expanded continually and such services as museums, outdoor exhibits, conducted trips, illustrated talks and labelled nature trails are available in many parks.

Manitoba. The provincial parks system of Manitoba, administered by the Parks Branch of the Department of Tourism, Recreation and Cultural Affairs, consists of four major classifications of outdoor recreation development: provincial parks, which are large area parks with a variety of natural attractions suited to outdoor activities; recreation areas, the natural attractions of which are modified to accommodate recreation activities of an intensive nature; waysides, which are located on most highways to enhance travel routes and provide attractive rest spots; and heritage areas, which are areas of outstanding scenic beauty or have natural, physical or historic features of special local interest.

There are ten provincial parks in Manitoba. Birds Hill Provincial Park comprises 8,400 acres and an 80-acre man-made lake within easy reach of the Manitoba capital. In south-central Manitoba, Spruce Woods Provincial Park is set in an area thriving with wildlife, woods and wildflowers along the valley of the Assiniboine River, and also features lookouts over the shifting sand dunes of the Bald Head Hills, the province's only truly desert area. Near the western boundary, Assinippi Provincial Park is under development on the southern end of a 45-mile-long man-made lake behind the Shellmouth Dam on the Assiniboine. The Shellmouth reservoir will provide for development of water-based facilities on a large scale for western Manitoba residents and visitors. Hecla Provincial Park with an area of 333 sq miles in the southern section of Lake Winnipeg is the most recent addition to the parks system. This park includes a group of islands of which Hecla is the largest. Grindstone Point, adjacent to Hecla Provincial Park, is also being developed as a recreation area in conjunction with the park. Hecla Island is connected by causeway to the mainland and Highway 8. Park developments will offer resort facilities for water sports, hiking, snowmobiling, hunting and fishing and will include a marina and an interpretative centre. Hecla village will be developed as a historic Icelandic fishing site.

Manitoba provincial parks have a total area of about 3,385 sq miles. In addition, there are 44 recreation areas ranging in size from four to 2,364 acres, and more than 87 roadside facilities. The park system contains 55 campgrounds. Hunting and fishing lodges are common and accommodation in some of the parks ranges from modern resorts and motels to hotels and cabins. Golf, tennis, boating, swimming, fishing, riding and hiking facilities are available, as well as children's playgrounds. A major ski area and a system of snowmobile trails provide for growing participation in winter outdoor activities. There are 73 commercial concessions operating within the parks system, offering a variety of services ranging from restaurants to riding stables and marinas.

Rehabilitation and expansion of existing recreation areas are continuing in an effort to provide new camping and improved day-use facilities. Development is continuing, too, in the heritage-area program to preserve and interpret sites, large and small, illustrating the natural and human history of the province. Surveys have been conducted to study potentials along the shores of Lake Winnipeg, along the rivers flowing into Lake Winnipeg from the east and to provide guidance for future development of recreational facilities in Manitoba's Interlake area. In northern Manitoba studies are being made along the Nelson and Churchill Rivers.

Popularity of the Manitoba provincial parks and recreation areas is indicated by impressive annual increases in the number of park visitors. In the three years ended March 31, 1972 the numbers were estimated at 2,420,000, 2,650,000 and 3,058,000, respectively. An estimated 114,946 families and groups in tents, trailers and truck campers utilized campground

facilities across the province in the 1971-72 fiscal year. The admission fee to Manitoba's provincial parks is \$1 per day or \$5 for the season.

Saskatchewan. Saskatchewan's 15 provincial parks, comprising 1,821 sq miles of recreation land, range from forested parklands in the midst of the sprawling prairie and valley parks between the soft hillsides of the legendary Qu'Appelle Valley to rugged northland settings. Each park offers camping, picnicking, boating and swimming facilities and a variety of recreational activities. Eleven of the parks operate a supervised recreation program of regularly scheduled activities for all ages - arts and crafts, hikes along park nature trails, social functions and numerous team sports. Moose Mountain boasts a split-fieldstone chalet and other modern cabin accommodation. Cabin facilities are also found at Cypress Hills, Battlefords, Duck Mountain and Greenwater Lake parks. Golf courses are found at Cypress Hills, Moose Mountain and Duck Mountain parks. The unique forest cover of stately lodgepole pine and white spruce in Cypress Hills Park provides cover for elk, antelope, deer, beaver, sharp-tailed grouse and quiet trout-stocked streams. In Duck Mountain, Moose Mountain and Greenwater Lake parks, moose, elk, and bear appear randomly and deer and beaver are common to all, as are several varieties of grouse and many species of waterfowl and smaller land birds. Pike, pickerel and perch abound in almost all park lakes and brook and rainbow trout are ardently sought in northern waters. Canoe routes and commercially operated fishing and hunting camps are found in the province's three semi-wilderness parks - La Ronge, Nipawin and Meadow Lake. Hundreds of roadside camp and picnic grounds are in operation. Four official campgrounds and several other camping areas dot the province's 406-mile stretch of Trans-Canada Highway. Saskatchewan also operates 83 regional parks which, although designed primarily with local patrons in mind, attract large numbers of tourists. Davidson Park, associated with the largest earth-fill dam in Canada, has a modern visitors' centre with cafeteria and interpretative displays. A 40,000-acre wilderness area in east-central Saskatchewan is appropriately named Wildcat Hill. Marked sites of historic interest total 143 and include the Wood Mountain NWMP Post, Last Mountain House, Touchwood Hills, Cannington Manor, Steele Narrows, Fort Carlton and Cumberland House historic parks.

Alberta. Alberta has 51 provincial parks containing 218 sq miles; 46, with a total area of approximately 208 sq miles, are in use and continuing development. Cypress Hills Provincial Park with an area of 78 sq miles is the largest and is situated in the southeast portion of the province. Other parks are: Aspen Beach, Beauvais Lake, Big Hill Springs, Big Knife, Bow Valley, Bragg Creek, Calling Lake, Chain Lakes, Crimson Lake, Cross Lake, Dillberry Lake, Dinosaur, Dry Island Buffalo Jump, Entrance, Garner Lake, Gooseberry Lake, Gregoire Lake, Hasse Lake, Hommy, Jarvis Bay, Kinbrook Island, Lac Cardinal, Lesser Slave Lake, Little Bow, Little Fish Lake, Long Lake, Ma-Me-O, Miquelon, Moonshine, Moose Lake, O'Brien, Park Lake, Pembina River, Pigeon Lake, Police Outpost, Red Lodge, Rochon Sands, Saskatoon Island, Sir Winston Churchill, Taber, Thunder Lake, The Vermilion, Tillebrook, Trans-Canada Campsite, Wabamun Lake, Williamson, Willow Creek, Winagami Lake, Woolford, Writing-On-Stone, Youngs Point. These parks, which are generally provided with picnic, camping and playground facilities, are maintained by the Department of Lands and Forests, Provincial Parks Division, primarily for the recreation and enjoyment of residents and visitors. There is a park within easy reach of almost every town. The most northerly park is Gregoire Lake, about 20 miles south of Fort McMurray, and the southernmost park is Police Outpost which adjoins the Alberta - Montana border. Alberta's provincial parks were visited by 4,752,023 tourists and vacationers between April 1, 1971 and March 31, 1972.

In addition to the recreational parks, 26 sites have been established to mark and preserve locations of historical interest. They are Athabasca Landing, Buckingham House, Bugnet Plantation, Coronation Boundary Marker, Early Man Site, Fort DeL'Isle, Fort George, Fort Vermilion, Fort Victoria, Fort White Earth, Frog Lake Massacre, Grizzly Bear Telegraph Station, Hay Lakes Telegraph Station, Head-Smashed-In Buffalo Jump, Massacre Butte, Ribstones, Rocky Mountain House Fort, Standoff, Stephansson, Twelve Foot Davis, Shaw Woolen Mill, Rev. George McDougall's Death Site, McLeod Fort, Indian Stone Pile, St. Joseph Industrial School and Old Women's Buffalo Jump.

Willmore Wilderness Provincial Park adjoins Jasper National Park in the north and extends along the British Columbia border. Wilderness areas have been set aside to preserve as

far as possible the natural scene and are neither subject to development nor provided with roads. Two wilderness areas were established under the Forest Reserves Act in 1961. Willmore Wilderness Provincial Park has an area of 2,149 sq miles, Siffleur Wilderness 159 sq miles and White Goat Wilderness 489 sq miles. The Ghost River Wilderness area of 59 sq miles was established under the Provincial Parks Act in 1967. The wilderness areas are complemented by six natural areas established during 1968-70 in representative zones of the province: Kootenay Plains in the mountain region, 13 sq miles; Foothills, 160 acres; Parkland, 159.2 acres; Brown-Lowrey, 640 acres; Red Rock Coulee, 801 acres; and Plateau Mountain, 320 acres.

British Columbia. There are 294 (175 developed) provincial parks in British Columbia, having a total area of about 10,664 sq miles. These parks are classified as A, B and C. Class A parks are intended to preserve outstanding natural, scenic and historic features of the province for public recreation; they have a high degree of legislative protection against exploitation and alienation. Class B parks are also primarily for the protection of natural attractions but other resource use may be permitted if it does not unduly impair recreational values. Class C parks are intended primarily for the use of local residents and are usually managed by local park boards. Nature Conservancy Areas in any park are fully protected from resource development and are dedicated to a variety of recreational uses. There are immense wilderness areas such as Tweedsmuir Park and Wells Gray Park and outstanding scenic and mountain reserves such as Garibaldi, Mount Robson, Manning and Bowron Lake Parks. Mount Edziza Park and Recreation Area, established in 1972, is a wilderness area located in the northwest section of the province near historic Telegraph Creek. It contains outstanding examples of recent volcanic activity and covers 898 sq miles (509 sq miles Class A park, 389 sq miles recreation area). The formal gardens of Peace Arch Park are a monument to the goodwill between Canada and the United States. Vancouver Island has a chain of small forested parks that have achieved tremendous popularity with tourists; the best known are Little Qualicum Falls, Miracle Beach and Goldstream. The famous gold town of Barkerville was restored and became the first provincial historic park; Fort Steele in the East Kootenay area is also being restored to preserve another of British Columbia's pioneer settlements. Sixteen marine parks with mooring facilities and campgrounds have been developed on mainland inlets and coastal islands for the benefit of water-borne vacationers.

The popularity of British Columbia's parks, with their integrated campgrounds and picnic areas, is attested by the fact that about 7,840,000 park visits were recorded during 1972; about 18% of the visitors were campers and the remainder day visitors. Records show that Mount Seymour, Cultus Lake and Golden Ears Parks were the most widely used.

1.4.4 The National Capital Region

Canada's Capital lies in a magnificent natural setting, with its hub on the limestone bluff on the south shore of the Ottawa River below the Chaudière Falls. The original inhabitants in this area were the Algonquin Indians, who were driven out by the Iroquois in the middle of the 17th century. Champlain explored the Ottawa in 1613 and called it "la grande rivière des Algonquins". Early English traders called it the Grand River. "Ottawa" is the anglicized form of Outaouac or Outaouais, the name of the Indian tribe from Lake Huron which traded with the French in the 17th century. They carried their furs by this river. Explorers, fur-traders, missionaries and, during the 19th century, lumbermen and settlers travelled up and down the Ottawa River.

The first settlement in the region was founded by Philemon Wright, from Woburn, Massachusetts. Early in 1800 he led a small group of farmers and established a settlement in what is now Hull. He also brought in tradesmen and soon had a small self-sufficient community. Wright started the great Ottawa Valley timber trade by taking a raft to Quebec City in 1806, fortuitously meeting England's need for an alternative source of timber when Napoleon had closed the Baltic timber trade.

Settlement on the south shore of the river commenced in earnest about a generation later. The War of 1812 drew attention to the vulnerability of the line of communications along the St. Lawrence River linking Quebec City with the settlements in Upper Canada; a secure alternative route was needed. After many delays and studies, a new route to Kingston via the Ottawa River and Rideau and Cataraqui river systems was approved. Finally, in 1826, Lieutenant-Colonel John By of the Royal Engineers was sent to the Chaudière area to build a canal from that point to Kingston. By employed two companies of Royal Sappers and Miners

and a labour force, mainly Irish, of several thousand men to construct the canal. In 1823, the Earl of Dalhousie, Governor-in-Chief of British North America, had secured commanding ground for the Town. In 1827, By laid out two settlements, Upper Town and Lower Town, adjacent to this Crown land, at that time called Barrack Hill. The canal was completed in 1832 and Bytown began to grow and prosper. Stores, factories, banks, churches and schools appeared. Steamboats plied the river and canal. A newspaper, the *Bytown Gazette*, was started in 1836.

Bytown was now the inland centre of the squared timber trade and by 1850 could boast of some fine stone buildings, among them the home of Thomas MacKay which today forms the central part of the residence of the Governor General of Canada. A change then occurred in the timber industry; the British system of preferential import duties on squared white and red pine logs was abandoned and trade began to decline. However, by this time the accessible forest stands of the eastern United States were depleted and sawn lumber was needed to house a growing population. Also, the American railway and canal network had extended to the Canadian border making transportation easy. Encouraged by these favourable conditions American industrialists came to Bytown and established large sawmills by the Chaudière Falls. Soon the islands about the falls and the flats on both shores were covered with lumber piles and loaded barges were on their way to the American market. The lumber industry began its rise to dominating importance. At the beginning of 1855, Bytown became a city and took the name Ottawa.

The United Province of Canada, since its formation in 1841, had shuttled its capital between Kingston, Toronto, Montreal and Quebec and was now trying to agree on a permanent site. At the end of 1857, Queen Victoria settled the dispute by choosing Ottawa. Government buildings for the new capital were designed and contracts were let in 1859 for their construction. However, the cost was much greater than expected and it was not until 1866 that the government of the Province of Canada actually moved to Ottawa. The next year the first Parliament of the new Dominion of Canada met in an incomplete Parliament Building, situated on the former Barrack Hill.

The nation was prosperous during most of the next decade. Ottawa grew and the government expanded as the Dominion extended its authority over more and more of British North America. In 1871 the city had a population of about 22,000. Many fine homes and stores in stone and brick were built. The Departmental Buildings, flanking the Parliament Building on the Hill, were enlarged. An old wooden City Hall near the Rideau Canal was replaced in 1876 by a fine stone building and a large post office was erected at the city's centre. By the end of the century, Ottawa was a flourishing industrial centre with a population of 59,000. It remained the hub of the lumber industry of eastern Canada, had the largest paper mills in the country and the leading match factory in the world. However, little effort had been made to preserve or enhance its natural beauty until the Ottawa Improvement Commission was formed in 1899 and the Driveway along the Rideau Canal was begun. Progress was slow but in the years up to the beginning of World War I the city centre began to take on a new face. Many new government buildings were built — the Dominion Observatory and Geodetic Building at the Experimental Farm, the Archives Building, the Victoria Memorial Museum, the Royal Canadian Mint and the Connaught Building. In 1912, the Grand Trunk Railway completed construction of the Union Station and the Chateau Laurier. During this period several studies were made and plans recommended for the improvement of the National Capital, but these were deferred because of the War and for other reasons. Fire destroyed the Parliament Building in 1916, leaving standing only the Library now forming part of the magnificent building of neo-Gothic architecture which replaced it. The beautification of the Capital was continued by the Ottawa Improvement Commission until 1927, when it was replaced by the Federal District Commission. However, the first concrete step in the redevelopment of the National Capital took place in 1951 with the tabling of a comprehensive master plan for the National Capital Region. The plan, referred to as the "Gréber Plan", brought a solution to the many problems impeding the growth of the region and the National Capital Commission was formed in 1959 to carry out the recommendations.

Ottawa today, with its population of some 300,000, together with the city of Hull on the north side of the Ottawa River with its population of about 63,000, comprises the core of the National Capital Region, an area of about 1,800 sq miles in Ontario and Quebec. In lineal distance, the nearest extremity of the Region to Parliament Hill is 18 miles and the farthest is

35 miles. Within that area there are 57 municipalities and a total population of about 600,000. Industrial development in the Region is limited, a good proportion of the work force being employed by the federal government or associated with government functions.

Although the terms of reference of the National Capital Commission are "to prepare plans for and assist in the development, conservation and improvement of the National Capital Region in order that the nature and character of the seat of the Government of Canada may be in accordance with its national significance", it should be noted that the Commission does not have jurisdictional authority over any of the municipal or regional authorities or the two provincial governments concerned. Most matters affecting the municipalities — such as planning, zoning, land use, building density, public transit, parking and construction of streets, arterial roads and highways — are within their sole jurisdiction, subject only to provincial government approval, so that the National Capital Commission in its development efforts depends essentially upon the co-operation of each municipality and provincial government. As a result of this co-operation, the cities of Ottawa and Hull and their surrounding areas have, as a whole, become an efficient and aesthetically satisfying place in which to carry on the nation's business and a fitting symbol of Canada's cultural and linguistic values.

In recent years, the efforts of the Commission have focused on the development of a unified and lively core for the Capital. At a constitutional conference in Ottawa in 1969, the federal and provincial first ministers declared "the cities of Ottawa and Hull and their surrounding areas" to be the Canadian Capital Region. Almost immediately, work began to remove the longstanding economic disparity between Hull and Ottawa. Fifty-nine acres have been acquired in Hull for a federal building program to house various government departments. These 59 acres include 44 acquired in 1972 by the Commission from the E.B. Eddy Company. Within weeks of this acquisition, pulpwood piles and mills began to vanish from the landscape and a long-cherished goal came at least partially into view: an Ottawa - Hull necklace of park, promenade and rushing water encircling Parliament Hill. Also in 1972, work neared completion on the new Portage Bridge linking Ottawa and Hull and the new Airport Parkway from the airport to downtown Ottawa - Hull was officially opened.

The recreational amenities of the Region, and especially those in Ottawa and Hull, have been developed for people to use and enjoy. To the advantages of the well-known scenic driveways and large parks and playgrounds have recently been added the pleasures of a four-mile ice skating rink in winter and boating in summer along the Rideau Canal through the heart of Ottawa, maple sugar shanties, large garden allotments where families may hoe and chat in open air and sun, and 50 miles of looping bicycle paths winding past waterways and through pleasant wooded areas. Public concerts in the parks, walking tours, attractive pedestrian malls and museums are there for the participation of all Canadians and their visitors and the Region has become a centre of national significance in which all may have a sense of pride and possession.

1.5 Preservation of the environment

Over the past several years Canadians have become increasingly aware of the problems of environmental quality management. The deteriorating quality of Canada's waters, its air and its soils, the noise and congestion of urban life, and the exploitation of its mineral resources, its fisheries and forests and its wildlife became vitally important to many concerned and conscientious citizens. Man was clearly having a greater and greater impact on his natural environment and yet he had no definite idea of what the delicate ecosystem could bear in the way of man's intrusion. A range of problems relating to the wise use of the natural environment became one of the major issues of the late 1960s and promises to remain so through the rest of the century. Obviously, an issue of this magnitude required an immediate response from all governments in Canada. It was vital to develop a consistent philosophy regarding man's place in the Canadian and world environments and to develop a series of policies that could give effect to this philosophy.

The goals of the federal government in this respect are, on the one hand, to ensure that all Canadians have access to a style of life befitting a nation rich in natural resources and, on the other hand, to safeguard these natural resources for future use by the present generation and the generations to follow. To this end, the Department of the Environment has been established to help ensure the protection, preservation and enhancement of Canada's environment while encouraging efficient use of its natural resources.

The Department is concerned primarily with renewable resources — air, water, fish, forests and wildlife. Its research, planning and management programs are directed toward incorporating environmental design into resource management processes. How many salmon can be taken from the Fraser River without jeopardizing future generations of fish? How much effluent can be discharged safely into a river? How rigidly can sanctions be employed against polluters without causing adverse economic consequences in an area? These are examples of the extremely difficult questions that need to be faced, and different answers apply in different cases.

1.5.1 Federal programs

1.5.1.1 The federal Department of the Environment

The federal Department of the Environment was established by the Government Reorganization Act, 1970 (SC 1970-71, c.42) which received Royal Assent on June 10, 1971. The general goals of the Department are as follows: to maintain the capacity to meet historical and statutory responsibilities for research and management of air, water, fish, forest and wildlife resources; to clean up and control pollution; to assess and control the environmental impact of major new programs, projects and developments; to improve the understanding of long-term environmental phenomena; to promote and support international environmental initiatives; and to create a better public awareness and understanding of environmental issues.

Since almost all of these goals involve co-operation and co-ordination with other departments and with other governments both in Canada and internationally, the Department of the Environment is engaged in a co-operative endeavour in which it acts both to carry out programs of its own and to catalyze programs of others in order to improve the Canadian environment.

The Department was originally organized in seven "Services", each with responsibility for some particular area of departmental programs. In December 1972 the Department was reorganized to reduce the number from seven to five under two principal components, Fisheries and Marine Service, and Environmental Services, each headed by a Senior Assistant Deputy Minister. The following new organization came into effect January 1, 1973.

The Fisheries and Marine Service is responsible for fisheries research, fisheries development, fishing operations on both coasts and on inland waters, the administration of Canada's role in international fisheries and the Fisheries Prices Support Board, also all ocean-oriented activities which include oceanography and hydrography, as well as the administration of small craft harbours. The Chairman of the Fisheries Research Board functions closely with the Senior Assistant Deputy Minister, Fisheries and Marine, though he reports through the Deputy Minister.

The second component comprises three Environmental Services and Planning and Finance.

The Environmental Management Service has nation-wide responsibilities related to forests, inland waters, wildlife, lands, and major environmental effects studies; these responsibilities are discharged by four Directorates. The Canadian Forestry Service is responsible for forestry and forest products research, consultative services, and forest management services on federal lands. The Inland Waters Directorate plans for and manages national inland water research and data network programs, including hydrometric surveys, and co-operative federal-provincial programs for water resource management. The Canadian Wildlife Service is responsible for the conservation and management of migratory birds, wildlife habitat acquisition and management, wildlife research, and consultative services. The Lands Directorate is responsible for land classification, land inventory, and land use study and planning.

The Atmospheric Environment Service is responsible for planning, establishing and operating air-quality networks and surveys, for providing an information service on the state of the atmosphere and trends in its quality, for collecting and analyzing weather data and ice-movement data, for atmospheric research, for air and noise pollution research and finally for weather forecasting.

The Environmental Protection Service takes action to prevent or combat environmental problems for which the Department has responsibility, including pollution control in water and air, solid wastes management and control and disposal of environmental contaminants. It

is responsible for the control of activities having an ecological impact, for noise control, for the operation of an emergency pollution centre, and for environmental protection related to federal activities and facilities.

The Planning and Finance Service provides an over-all framework of policy and planning advice; co-ordinates the government's relationships respecting environmental and resource matters with the provinces and other countries; develops and co-ordinates a comprehensive approach to departmental science policy and research activities; supports the over-all departmental program by assisting in the acquisition and deployment of the human, physical and financial resources required for the efficient and effective fulfillment of departmental objectives.

1.5.1.2 Federal legislation

A large number of Acts that are important in renewable resources and environmental quality management are already on the statute books. Major pieces of legislation and the responsible department include the following:

The Department of the Environment: The Fisheries Act (RSC 1970, c.F-12, amended 1970); The Canada Water Act (and phosphate regulations) (SC 1969-70, c.52); The Migratory Birds Convention Act (RSC 1970, c.M-12); The International River Improvements Act (RSC 1970, c.I-22); The Game Export Act (RSC 1970, c.G-1); The Fisheries Development Act (RSC 1970, c.F-21); The Clean Air Act (SC 1970-71, c.47); The Forestry Development and Research Act (RSC 1970, c.F-30).

The Ministry of Transport: The Navigable Waters Protection Act (RSC 1970, c.N-19); The Canada Shipping Act (RSC 1952, c.29, amended 1971); The National Harbours Board Act (RSC 1970, c.N-8); The St. Lawrence Seaway Authority Act (RSC 1970, c.S-1); The Motor Vehicle Safety Act (SC 1969-70, c.30).

The Department of Indian Affairs and Northern Development: The Arctic Waters Pollution Prevention Act (SC 1969-70, c.47); The Northern Inland Waters Act (SC 1969-70, c.66); The National Parks Act (RSC 1970, c.N-13); The Dominion Water Power Act (RSC 1970, c.W-6).

The Department of Regional Economic Expansion: The Prairie Farm Rehabilitation Act (RSC 1970, c.P-17); The Fund for Rural Economic Development Act (SC 1966-67, c.41).

The Department of Energy, Mines and Resources: The Atlantic Provinces Power Development Act (RSC 1970, c.A-17); The National Energy Board Act (RSC 1970, c.N-6); The Resources and Technical Surveys Act (RSC 1970, c.R-7).

The Department of Veterans Affairs: The Veterans Land Act (RSC 1970, c.V-4).

As the list indicates, not all federal agencies dealing with environmental and renewable resource matters have been brought together in the new Department of the Environment. For example, the Department of Energy, Mines and Resources with its responsibilities for the Geological Survey of Canada and the Fuels Combustion Research Centre provides an important contribution to the environmental and renewable resource field; the Department of Agriculture carries out environmental research and administers the Canada Committee on Pesticide Use in Agriculture; the Department of Indian Affairs and Northern Development is significantly involved in environmental and renewable resource activities through its responsibilities for northern development and for the national and historic parks. Other departments having responsibilities in this area include: the Department of Regional Economic Expansion; the Department of Finance which funds resource programs and promotes economic development; the Ministry of Transport which administers the Canada Shipping Act containing legislation respecting the prevention of marine pollution; the Department of External Affairs which is responsible for co-ordinating international relations and environmental and resource issues of a multinational nature; and the Ministry of State for Urban Affairs which is responsible for promoting research into urban environmental problems. Indeed, all departments of government are concerned with the impact of their activities upon the environment.

In addition, there are Crown corporations, boards, and quasi-governmental organizations with an interest in resource development and the environment; these include the Northern Canada Power Commission, the Northern Transportation Company, the National Harbours

Board and the St. Lawrence Seaway Authority. The Central Mortgage and Housing Corporation provides funds for municipal sewage treatment facilities. Other agencies, such as the National Research Council, award grants-in-aid of research into resources and environmental problems.

1.5.2 Federal-provincial programs

Jurisdiction over some natural resources, such as water, is shared by the federal and provincial governments. In other instances where jurisdiction rests with one level of government, such as the federal responsibility for fisheries and provincial responsibility for forests, management practices for one resource may affect the management of others. Consequently, many of the federal government's environmental programs are carried out in co-operation with the provinces.

For water resources there are only two areas in which jurisdiction is not shared — the northern territories, and the sea and sea-bed beyond the recognized boundaries of the coastal provinces and out to the limits established by national claim and international convention. Within the boundaries of the provinces, however, both the federal and provincial governments possess significant, and sometimes overlapping, responsibilities.

Given the fact of divided jurisdiction, integrated water management requires institutional arrangements within which all jurisdictions, competences and capabilities can be brought together for joint goal-setting, planning and operation. These arrangements include consultative committees, set up with each province, to develop improved understanding of mutual problems and to advise governments on priorities for joint action. Consultative committee discussions pave the way for federal-provincial agreements to study particular river basins. For example, the Qu'Appelle Basin Study Agreement signed in August 1970 was a joint undertaking by the federal government and Saskatchewan and Manitoba to prepare a plan to guide the future development and management of the water and related land resources of the basin. Similarly, the preparatory work for the Saint John River Basin Agreement between Canada and New Brunswick, now in its third year under authority of the Canada Water Act, was facilitated by the Canada - New Brunswick Consultative Committee. When public controversy arose in 1970 over the reduced water levels in the Peace-Athabasca Delta, the Canada - Alberta Consultative Committee was used to provide a preliminary overview of the situation. A joint study was subsequently launched to determine possible remedial measures. It is anticipated that more integrated water management programs jointly undertaken by the provincial and federal governments will be agreed to throughout Canada; the Churchill River Basin is one such program that is envisaged for 1973.

Some other examples of established federal-provincial co-operative arrangements on the subject of water include the Prairie Provinces Water Board which apportions water among the three provinces, the Fraser River Joint Advisory Board which advises on a program to reduce the flood threat to the Fraser River Basin, and the Saskatchewan-Nelson River Basin Board which completed a major water supply study in 1972. There are joint federal-provincial arrangements for the protection and use of other renewable resources as well.

Current programs of major importance can be cited to exemplify the federal government's concern for the environment. On August 31, 1970, a major integrated management study agreement was signed by the governments of Canada and Manitoba. The purpose of the agreement is to determine the environmental effects of changing the levels of Lake Winnipeg and the stream flows in the Churchill and Nelson river systems caused by the development of the hydro-electric potential of north-central Manitoba. Another such program, undertaken in co-operation with Québec, is an assessment of potential environmental impact associated with a large hydro-electric and other resource development proposal for the watersheds of southern James Bay. The potential environmental impact of the construction and operation of a major oil or gas pipeline and support facilities from the Arctic to central Canada is being assessed. Results of these study programs will be incorporated into the design of the development projects.

Co-operative research programs have been developed with industry and other organizations to reduce water pollution from pulp and paper mills. Recipients of contracts were: the Pulp and Paper Research Institute, Pointe Claire, Que.; the BC Research Council, Vancouver, BC; Domtar Limited, Cornwall, Ont.; MacMillan Bloedel Research Limited, Vancouver, BC; and the Research and Productivity Council of New Brunswick, Fredericton.

1.5.3 International programs

Canada must co-operate with other countries in order to make progress toward many important environmental and resource objectives. The following are some of the international bodies concerned with environmental and resource matters in which Canada participates.

The *International Joint Commission* assists Canada and the United States in carrying out the provisions of the Boundary Waters Treaty of 1909. It consists of six Commissioners, three appointed by the President of the United States and the other three by the Government of Canada. The Treaty requires that projects for the use, obstruction, and diversion of boundary waters and, in certain instances, of rivers crossing the International Boundary, must be approved by the Commission.

In addition, the Commission is requested by the governments of the two countries to investigate and report on other matters of concern along the common border. In recent years the Commission has received a number of requests to investigate and report on air and water pollution problems. Much of its work is done under the aegis of advisory boards of various types, usually charged with specific area or functional responsibilities. They report to the Commission which drafts the final reports and recommends appropriate action.

Following several years of research carried out by its advisory boards for Lake Erie and for Lake Ontario - International St. Lawrence River, the Commission issued its final report on pollution in the Lower Great Lakes and the international section of the St. Lawrence River in 1971. This report led to the conclusion of a Canada - US Agreement on Great Lakes Water Quality which was signed in Ottawa in April 1972 by Prime Minister Trudeau and President Nixon. The Agreement contains a series of water quality objectives which both countries agree to attain within specified time limits, by implementing programs to control the input of pollution into the Great Lakes. Under the terms, the International Joint Commission will monitor the progress in each country toward fulfilling the Agreement. In addition, the Commission has been requested to undertake two major studies, one concerned with pollution in the Upper Great Lakes and the other with pollution of the Lakes from land sources and agriculture.

During 1972, the Commission issued its final report on transboundary air pollution in the Detroit and St. Clair River areas. Meetings between the two federal governments, the province of Ontario and the state of Michigan were held to examine and to seek ways of implementing the IJC's recommendations for the abatement of air pollution in the area.

In that same year work continued on a number of other water matters along the Canada - US boundary. As its name implies, the IJC International Great Lakes Levels Board is concerned with water levels in the Great Lakes as a whole. Its International St. Lawrence Board of Control deals with water levels in Lake Ontario and the regulation of outflow from the lake. The St. Croix Board is concerned with water levels and supervision of dam construction in the St. Croix River. The Lake of the Woods Board, the Lake Superior Board, the Rainy Lake Board, and the Kootenay Board, are concerned with water levels in these lakes and rivers. The Souris River Board is responsible for allocation of water in that river. The Niagara Board deals with water levels in Grass Island Pool, and the operation of the Lake Erie ice boom. The International Joint Commission has an interest in the measurement and apportionment of water in the St. Mary and Milk rivers. Also reporting to the International Joint Commission are international engineering boards for the Saint John, the St. Croix, the Souris, and the Red rivers. An IJC Technical Advisory Board on Air Pollution is concerned with the occurrence of air pollution anywhere along the International Boundary. There is an IJC Advisory Board for Pollution Control in the St. Croix River and another for the Red River.

Canada is a member of nine international fisheries commissions, as well as the *International Council of Exploration of the Sea*. The latter, composed of Belgium, Canada, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, the Netherlands, Norway, Poland, Portugal, Spain, Sweden, the USSR and the UK, encourages and co-ordinates studies of the marine environment with particular reference to the living resources of the sea, primarily in the north Atlantic area. The international fisheries commissions, established under the terms of formal Conventions, assume responsibility for the investigation of specific living marine resources in defined areas, in order to further rationalize development and conservation of fisheries of common concern to member states. These commissions are: the *International Pacific Halibut Commission*, the *International Pacific Salmon Fisheries*

Commission, the International North Pacific Fisheries Commission for the High Seas, the North Pacific Fur Seals Commission, the International Commission for the Northwest Atlantic Fisheries, the Great Lakes Fisheries Commission, the International Whaling Commission, the Inter-American Tropical Tuna Commission and the International Commission for the Conservation of Atlantic Tuna.

Canada is taking part in the *International Hydrological Decade* (January 1, 1965 - December 31, 1974), with participation by 108 countries, which was set up under UNESCO auspices to facilitate a better understanding of hydrological phenomena to allow prediction of the results of development of water resources, in the interests of better management. The National Co-ordinating Committee is composed of representatives from federal, provincial, university and specialized agencies. Canada is a member of the international working groups on the water balance, representative and experimental basins, and hydrological problems related to water quality; there are International Hydrological Decade Committees in eight provinces.

Canada is also involved in the *International Field Year for the Great Lakes (IFYGL)*, established within the framework of the International Hydrological Decade. The period of intensive field activity is April 1, 1972 - March 31, 1973, to be followed by organization and reporting of data to the end of 1974. The IFYGL is an intensive study of the Lake Ontario basin involving a large number of Canadian and United States federal, provincial and state agencies and universities; a steering committee guides the planning program. This study will involve the examination of problems associated with the geology, limnology, hydrology, meteorology, biology and chemistry of the lake and its basin.

The *Canadian National Committee for Geography* of the *International Geographical Union* was responsible for the establishment of the organizing committee to host the 22nd International Geographical Congress in 1972. The Union was established to further international co-operation in the field of geography. The Congress is held every four years to bring all members together to study various problems relating to global aspects of geography. The secretariat of the Canadian committee is located in the Department of the Environment.

The *International Commission on Irrigation and Drainage*, of which Canada is a member, meets every three years to pool world knowledge on specific current problems in irrigation, drainage and flood-control engineering.

Canada is a member of the NATO-sponsored *Committee on the Challenges of Modern Society (CCMS)*. The Committee's main purpose is to consider specific problems of the human environment with the deliberate objective of stimulating action by member governments. To this end pilot projects on a number of subjects are being carried out under the aegis of the CCMS. Canada is involved in pilot projects on disaster assistance, road safety, pollution of coastal and inland waters, waste-water treatment, and advanced health care.

The *Organization for Economic Co-operation and Development* established an *Environment Committee* which includes Canada among its members. A number of Sector Groups were set up to accomplish the objectives of the Committee in various fields of environmental problems. The Urban Environment Group will suggest measures to reduce pollution levels and attempt to improve management practices relating to the protection and improvement of the urban environment. The Unintended Occurrence of Toxic Chemicals Group will look into the possibility of reducing the number of occurrences of toxic chemicals being introduced into the environment, and the relative costs and effects of the various methods utilized. The Air Quality Group will investigate and define problems of air pollution and suggest policies and actions for pollution control and air-quality maintenance as well as means by which governments may implement those policies. The Water Management Group will investigate and define the problems of managing water resources and suggest measures for the improvement and preservation of water quality by various management methods and the socio-economic effects of such schemes. The Steering Group on Eutrophication, a sub-group of water management, will oversee a series of studies to assess the costs of controlling the discharges of detergents, fertilizers and agricultural wastes into waterways.

In addition, Canada will work toward elucidation of a set of guidelines on the economic aspects of environmental policies at the international level, the development of realistic pollution control cost data and the reasonable and measured application of the 'polluter pays' principle. Several ad hoc Groups were established to undertake short-term investigations into

the following problem areas: impact of the motor vehicle; pollution by the pulp and paper industry; air pollution from fuel combustion in stationary sources; and environmental degradation from mediterranean development.

A Canadian national committee has been established which is responsible for the co-ordination and implementation of all *International Biological Program* projects in which Canada has active participation.

Canada played a prominent role in the *United Nations Conference on the Human Environment* held in Stockholm, June 5-16, 1972. The Canadian delegation, with representatives from the provinces and from industry, helped to frame many important resolutions and to ensure that recommendations important to Canada were embodied in the final United Nations Action Plan. Canada also provided a major impetus to the preparation of the "Declaration of the United Nations on the Human Environment"; the 26 principles of the Declaration were agreed to by all participating countries. A United Nations Governing Council on Environmental Programs was established to oversee the implementation of the Action Plan. A secretariat, headed by Mr. Maurice Strong of Canada, has been established at Nairobi to serve this Council.

The Stockholm Conference also resulted in Canada's participation in a number of conferences designed to reply to international environmental concerns; while, on the national scene, a federal-provincial task force has been formed to draw up a National Action Plan flexible enough to permit a co-operative and co-ordinated approach to national environmental issues by the federal and provincial governments and, at the same time, provide an appropriate response to the recommendations of the United Nations Action Plan.

Canada plays an active role in the *Inter-Governmental Maritime Consultative Organization* (IMCO), a specialized agency of the United Nations concerned mainly with maritime affairs. It is also a member of the Assembly or plenary body and of the Council (the 18-member governing body) as well as of the Maritime Safety Committee. This latter includes the sub-committee on marine pollution on which Canada is also represented. IMCO will sponsor an international conference on marine pollution in 1973 to draft an international agreement placing restraints on intentional contamination of the sea, land and air by ships and other equipment operating in the marine environment.

The *International Convention on Dumping of Wastes at Sea*, formulated in accordance with a recommendation of the Stockholm Conference, and concluded and opened for signature on December 29, 1972, has already been signed by this country.

Canada is engaged in preparations for the *UN World Population Conference* to be held in 1974.

Canada, with the world's longest coastline (which borders on three oceans), is deeply involved in intensive preparations for the *1973 Law of the Sea Conference*. The preservation of the marine environment in all its aspects is of the utmost concern to this country, and it can only be effected by an elaboration of international controls on the legitimate uses of the sea and hence the development of international environmental law, fully cognizant of the rights of coastal states.

Several monitoring programs sponsored by one or more of the United Nations specialized agencies receive Canadian support. All monitoring programs, such as those employed by Canada to monitor foods and man for residue build-up, submit their results to the Food and Agriculture Organization and the World Health Organization. Canada is a member of the World Weather Watch which forecasts weather patterns, etc., as well as of the Background Air Pollution Network which is responsible for the monitoring of atmospheric variables. The ten stations in this network which Canada has established fulfil our commitment under the UN Earthwatch Program. The Environmental Protection Service of the Department of the Environment, in co-operation with the provincial governments, monitors air quality in a number of Canadian cities and the results of this program are forwarded to the World Health Organization. This country also participates in the Working Group for the Integrated Global Ocean Station System (IGOSS) and the Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP); the administrative secretariat of GESAMP is provided by IMCO. Canada is also a member of the International Atomic Energy Agency (IAEA) which monitors the oceans and the atmosphere with regard to the level of radioactivity present and the amount of radioactive substances in these two spheres.

Canada has water-quality monitoring and surveillance programs on lakes, rivers and streams crossing the International Boundary, some of which are conducted under the auspices of the International Joint Commission. Canada is a member of the *UN Committee on the Peaceful Uses of the Sea-Bed and the Ocean Floor*, concerned with questions relating to marine pollution caused by the exploration and exploitation of marine mineral resources beyond the limits of national jurisdiction. The Committee has sought proposals for the establishment of an international body to regulate the exploitation of the sea-bed.

UNESCO has developed a program entitled *Man and the Biosphere (MAB)* which will seek to develop the scientific basis for the rational use and conservation of the resources of the biosphere; two committees, the Inter-departmental Committee for MAB and the Canadian Committee for MAB, will co-ordinate all aspects of this program. Canada has also been re-elected to a second term on the *International Coordinating Council* with representatives from 24 other member states and representatives from the United Nations Food and Agriculture Organization, World Meteorological Organization, International Committee for Scientific Unions, and International Union for the Conservation of Nature and Natural Resources.

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Tables

... not available
... not appropriate or not applicable
— nil or zero
— too small to be expressed

e estimate
p preliminary
r revised
certain tables may not add due to rounding

1.1 Approximate land and freshwater areas, by province

Province or territory	Land <i>sq miles</i>	Freshwater <i>sq miles</i>	Total <i>sq miles</i>	Percentage of total area
Newfoundland	143,045	13,140	156,185	4.1
Island of Newfoundland	41,164	2,195	43,359	1.1
Labrador	101,881	10,945	112,826	3.0
Prince Edward Island	2,184	—	2,184	0.1
Nova Scotia	20,402	1,023	21,425	0.6
New Brunswick	27,835	519	28,354	0.7
Quebec	523,860	71,000	594,860	15.4
Ontario	344,092	68,490	412,582	10.7
Manitoba	211,775	39,225	251,000	6.5
Saskatchewan	220,182	31,518	251,700	6.5
Alberta	248,800	6,485	255,285	6.6
British Columbia	359,279	6,976	366,255	9.5
Yukon Territory	205,346	1,730	207,076	5.4
Northwest Territories	1,253,438	51,465	1,304,903	33.9
Franklin	541,753	7,500	549,253	14.3
Keewatin	218,460	9,700	228,160	5.9
Mackenzie	493,225	34,265	527,490	13.7
Canada	3,560,238	291,571	3,851,809	100.0

1.2 Principal heights in each province

Province and height	Elevation <i>ft</i>	Province and height	Elevation <i>ft</i>
NEWFOUNDLAND		Rond Summit (Sutton Mountains)	
Long Range Mountains		Mount Bayfield	3,175
Lewis Hills	2,672	Mount Orford	2,925
Gros Morne	2,644	Hereford Mountain	2,875
Table Mountain (St. Barbe District)	2,375	Barn Mountain	2,775
Mount St. Gregory	2,251	Le Pinnacle Mountain	2,775
Gros Paté	2,152	The Laurentians	2,325
Blue Mountain	2,128	Mont Tremblant	3,175
Blue Hills of Couteau		Mont Sainte-Anne	2,625
Peter Snout	1,625	Mont Sir Wilfrid	2,569
Central Highlands		Monteregian Hills	
Main Topsail	1,822	Brome Mountain	1,750
Mizzen Topsail	1,761	Shefford Mountain	1,700
Torngat Mountains		Mont Saint-Hilaire	1,350
Unnamed peak (58° 57' 63° 47')	5,232	Yamaska Mountain	1,350
Cirque Mountain	5,144	Rougemont	1,300
Mount Cladonia	4,766	ONTARIO	
Mount Eliot	4,553	Highest point, Timiskaming District	
Mount Tetragona	4,450	(47° 20' 80° 44')	2,275
Quartzite Mountain	3,890	Ogidaki Mountain	2,183
Blow-Me-Down Mountain	3,880	Batchawana Mountain	2,142
Kaumajet Mountains		Tip Top Mountain	2,099
Bishops Mitre	3,650	Niagara Escarpment	
Finger Hill	3,390	Blue Mountains	1,775
PRINCE EDWARD ISLAND		Osler Bluff	1,725
Highest point on the Island, Queens County (46° 20' 63° 27')	465	Caledon Mountain	1,400
NOVA SCOTIA		High Hill	1,163
Highest point, Cape Breton (46° 42' 60° 36')	1,747	Mount Nemo	1,000
Franey Mountain	1,405	MANITOBA	
Nutty Mountain (Cobequid)	1,204	Baldy Mountain	2,729
Dalhousie Mountain (Cobequid)	1,115	Porcupine Hills	2,700
NEW BRUNSWICK		Riding Mountain	2,000
Mount Carleton	2,690	SASKATCHEWAN	
Moose Mountain	1,325	Cypress Hills	4,567
QUEBEC		Wood Mountain	3,325
Mont D'Iberville (Torngat Mountains)	5,210	Vermilion Hills	2,575
Appalachian Mountains		ALBERTA	
Mont Jacques-Cartier (Shickshock Mountains)	4,160	Mount Columbia	12,294
Mount Richardson	3,887	The Twins	12,250
Mount Albert District		Mount Alberta	11,874
Albert Sud Summit	3,775	Mount Assiniboine	11,870
Mount Logan	3,725	Mount Forbes	11,852
Mont Mégantic	3,625	Mount Temple	11,626
Albert Nord Summit	3,554	Mount Lyell	11,550
Matawees Mountain	3,525	Mount Hungabee	11,550
		Snow Dome	11,550
		Mount Kitchener	11,500

1.2 Principal heights in each province (concluded)

Province and height	Elevation <i>ft</i>	Province and height	Elevation <i>ft</i>
ALBERTA (concluded)		Mount Sir Alexander	10,740
Mount Athabasca	11,452	Fresnoy Mountain	10,730
Mount King Edward	11,400	Mount Gordon	10,550
Mount Brazeau	11,386	Mount Stephen	10,495
Mount Victoria	11,365	Cathedral Mountain	10,464
Stutfield Peak	11,320	Odaray Mountain	10,350
Mount Joffre	11,316	The President	10,297
Deltaform Mountain	11,235	Mount Laussedat	10,035
Mount Lefroy	11,230		
Mount Alexandra	11,214	YUKON TERRITORY	
Mount Sir Douglas	11,174	St. Elias Mountains	
Mount Woolley	11,170	Mount Logan	19,850
Lunette Peak	11,150	Mount St. Elias	18,008
Mount Hector	11,148	Mount Lucania	17,147
Diadem Peak	11,060	King Peak	16,971
Mount Edith Cavell	11,033	Mount Steele	16,644
Mount Fryatt	11,026	Mount Wood	15,885
Mount Chown	10,930	Mount Vancouver	15,700
Mount Wilson	10,700	Mount Hubbard	15,015
Clearwater Mountain	10,420	Mount Walsh	14,780
Mount Coleman	10,286	Mount Alverstone	14,565
Eiffel Peak	10,101	McArthur Peak	14,253
Pinnacle Mountain	10,062	Mount Augusta	14,070
		Mount Kennedy	13,905
BRITISH COLUMBIA		Mount Strickland	13,818
Vancouver Island Ranges		Mount Newton	13,811
Golden Hinde	7,219	Mount Cook	13,760
Mount Albert Edward	6,828	Mount Craig	13,250
Mount Arrowsmith	5,962	Mount Malaspina	12,750
Coast Mountains		Mount Badham	12,625
Mount Waddington	13,104	Mount Seattle	10,082
St. Elias Mountains			
Fairweather Mountain	15,300	NORTHWEST TERRITORIES	
Mount Root	12,860	Arctic Islands	
Monashee Mountains		Baffin	
Mount Begbie	8,963	Penny Ice Cap	6,750
Storm Hill	5,300	Mount Thule	5,614
Selkirk Mountains		Cockscomb Mountain	5,330
Mount Sir Sandford	11,555	Barnes Ice Cap	3,685
Mount Dawson	11,123	Knife Edge Mountain	2,493
Adamant Mountain	11,009	Banks	
Grand Mountain	10,842	Durham Heights	2,400
Iconoclast Mountain	10,666	Devon	
Rogers Peak	10,546	Ice Cap	6,300
Purcell Mountains		Ellesmere	
Mount Farnham	11,343	Barbeau Peak, highest point in	
Mount Karnak	11,100	Arctic Islands	8,584
Columbia (Cariboo) Mountains		Commonwealth Mountain	7,250
Sir Wilfrid Laurier	11,300	Mount Jeffers	6,250
Rocky Mountains		Mount Wood	4,750
Mount Robson	12,972	Mount Cheops	4,750
Mount Clemenceau	12,001	Victoria	
Mount Goodsir	11,750	Shaler Mountains	2,150
Mount Bryce	11,507	Mount Bumpus	1,650
The Helmet	11,250	Mainland	
Resplendent Mountain	11,240	Mount Sir James MacBrien	9,062
Mount King George	11,226	Franklin Mountains	
Whitehorn Mountain	11,139	Cap Mountain	5,175
Mount Huber	11,051	Mount Clark	4,798
Mount Freshfield	10,945	Pointed Mountain	4,610
Mount Mummery	10,918	Nahanni Butte	4,579
Mount Vaux	10,891	Richardson Mountains	
Mount Ball	10,865	Mount Goodenough	3,219
Bush Mountain	10,850		
Mount Geikie	10,843		

1.3 Elevations, areas and depths of the Great Lakes

Lake	Elevation above IGLD (1955) ¹ <i>ft</i>	Length <i>miles</i>	Breadth <i>miles</i>	Maximum depth <i>ft</i>	Total area <i>sq miles</i>	Area on Canadian side of boundary <i>sq miles</i>
Superior (Thunder Bay)	600.38 ²	383	160	1,301	32,483	11,541
Michigan (US)	577.24	321	118	923	22,400	—
Huron (Goderich)	577.24 ²	247	101	748	23,860	15,241
St. Clair (Belle River)	572.59 ³	26	24	21	432	189
Erie (Port Colborne)	570.05 ²	241	57	209	9,889	4,923
Ontario (Kingston)	244.27 ²	193	53	775	7,313	4,011

¹ International Great Lakes Datum (1955) = Mean Water Level at Pointe au Père, Que.

² Ten-year average.

³ Eight-year average.

1.4 Elevations and areas of principal lakes (exceeding 150 sq miles), by province

Province and lake	Elevation <i>ft</i>	Area <i>sq miles</i>	Province and lake	Elevation <i>ft</i>	Area <i>sq miles</i>
NEWFOUNDLAND AND LABRADOR			Île à la Crosse		
Ashuanipi	1,735	231	Lac la Ronge	1,380	151
Atikonikak	1,700	167	Montreal	1,193	546
Grand	284	208	Peter Pond	1,608	176
Joseph	1,700	174	Pinehouse	1,382	300
Melville	tidal	1,185	Primrose	1,262	156
Ossokmanuan Reservoir	1,570±	322	Reindeer	1,964	173
Smallwood Reservoir	1,545±	2,500	Selwyn	1,106	2,568
			Tazin	1,306	277
			Wollaston	1,130	151
				1,306	1,035
NOVA SCOTIA			ALBERTA		
Bras d'Or	tidal	424	Bistcho	1,812	165
QUEBEC			Claire	700	555
Albanel	1,276	172	Lesser Slave	1,892	451
Bienville	1,400	482			
Cabonga Reservoir	1,185±	262	BRITISH COLUMBIA		
Dozois Reservoir	1,235±	156	Atlin (total, 299) part	2,190	299
Eau Claire	790	534	Babine	2,332	191
Evans	792	211	Kootenay	1,745	157
Gouin Reservoir	1,235±	606	Ootsa	2,817	156
Leaf	tidal	175	Williston	2,200±	680
Lower Seal Lakes	860	223			
Manouane	1,620±	226	YUKON TERRITORY		
Minto	550±	294	Kluane	2,563	158
Mistassini	1,220	902			
Payne	425	206	NORTHWEST TERRITORIES		
Pipmuacan	1,300±	378	Aberdeen	261	425
Saint-Jean	321	387	Angikumi	842	197
Sakami	640	229	Artillery	1,196	213
			Aubry	845	151
ONTARIO			Aylmer	1,200	327
Abitibi	868	360	Baker	8	729
Big Trout	698	255	Bluenose	1,828	155
Erie (total, 9,889) part	572	4,973	Buffalo	870	237
Huron, including Georgian Bay			Clinton-Colden	1,200	284
(total, 23,860) part	581	15,241	Colville	805	176
Nipigon	855	1,872	Contowcyto	1,460	370
Nipissing	644	321	De Gras	1,365	244
Ontario (total, 7,313) part	246	4,011	Des Bois	975	181
Rainy (total, 360) part	1,108	286	Dubawnt	774	1,480
St. Clair (total, 432) part	574	189	Ennadai	1,020	263
St. Joseph	1,218	190	Eskimo North	tidal	324
Sandy	906	203	Eskimo South	5	243
Seul	1,170	640	Faber	699	170
Simcoe	718	287	Ferguson	35	227
Superior (total, 32,483) part	602	11,541	Garry	487	377
Trout (English River)	1,294	160	Great Bear	512	12,096
Woods, Lake of the (total,			Great Slave	513	11,031
1,695) part (reservoir)	1,060	1,216	Hottah	592	354
			Kamilukuak	874	245
MANITOBA			Kaminak	173	232
Cedar	830	522	Kaminuriak	302	212
Dauphin	853	201	Kasba	1,102	518
Gods	585	444	Keller	810	152
Granville	848	189	La Martre	870	686
Island	744	472	Mac Alpine	578	173
Manitoba	813	1,794	Mackay	1,415	410
Molson	724	154	Mallery	520	185
Moose	612	528	Netsilik	26	151
Oxford	711	155	Nonacho	1,045	303
Playgreen	601	254	Nueltin	911	880
Sipiwek	601	175	Point	1,229	271
Southern Indian	835	868	Princess Mary	380	202
Winnipeg	713	9,417	Scott	1,458	152
Winnipegosis	830	2,075	Selwyn	1,292	277
			Snowbird	1,177	195
SASKATCHEWAN			South Henik	604	198
Amisk	964	166	Tabesjuak	480	222
Athabasca	700	3,064	Takivjuak	1,250	417
Black	922	179	Tathlina	920	221
Churchill	1,382	216	Tehek	437	186
Cree	1,597	554	Trout	1,650	195
Deschambault	1,063	209	Tulemalu	916	258
Doré	1,506	248	Wholdaia	1,195	262
Frobisher	1,381	199	Yathkyed	461	559

Areas given are for mean water levels. All elevations are in feet above mean sea level. "Total" refers to the area of the whole lake; "part" refers to the area within the designated province or territory.

1.5 Lengths of principal rivers and their tributaries

Drainage basin and river	Length miles	Drainage basin and river	Length miles
FLOWING INTO THE ATLANTIC OCEAN			
St. Lawrence River	1,900	Nottaway (via Bell to head of Mégiscane)	482
Lake Superior		Rupert (to head of Témiscamie)	474
Nipigon (to head of Ombabika)	130	Eastmain	470
Magpie (to head of Mereke Lake)	71	Attawapiskat (to head of Bow Lake)	465
Lake Huron		Kazan (to head of Ennadai Lake)	455
Spanish	210	Grande rivière de la Baleine (Great Whale)	450
French (to head of Sturgeon)	180	George	350
Mississagi	165	Moose (to head of Mattagami)	340
Saugeen	100	Abitibi (to head of Louis Lake)	340
Lake St. Clair		Mattagami (to head of Minisinakwa Lake)	275
Thames	163	Missinaibi	265
Lake Erie		Harricana	331
Grand	165	Hayes	300
Lake Ontario		Aux Feuilles (Leaf)	298
Trent (to head of Irondale)	250	Winisk	295
Moir	77	Broadback	280
Ottawa River	790	A la Baleine (Whale)	266
Gatineau	240	de Povungnituk	242
du Lièvre	205	Innuisuc	239
Madawaska (to head of Madawaska Lake)	143	Petite rivière de la Baleine (Little Whale River)	236
Coulouge	135	Arnaud	234
Petawawa (to head of Butt Lake)	116	Nastapoca	224
Rouge	115	Kogaluc	189
Mississippi (to head of Mazinaw Lake)	105		
South Nation	100	FLOWING INTO THE PACIFIC OCEAN	
Rideau	91	Yukon (mouth to head of Nisutlin)	1,979
Dumoine	80	(International Boundary to head of Nisutlin)	
du Nord	70	Porcupine	714
de la Petite Nation	60	Stewart	448
Saguenay (to head of Péribonca)	434	Pelly	400
Péribonca	280	Teslin	378
Mistassini	185		244
Ashuapmchuan	165	Columbia (mouth to head of Columbia Lake)	1,243
Saint-Maurice	350	(International Boundary to head of Columbia Lake)	
Matawin	100	Kootenay	498
Manicouagan (to head of Mouchalagane)	348	Elk (to head of Elk Lake)	485
aux Outardes	310	St. Mary	137
Romaine	308	Slocan (to head of Slocan Lake)	73
Betsiamites (to head of Kanouanis)	276	Kettle (to head of Holmes Lake)	60
Moisie	255	Okanagan (to head of Okanagan Lake)	209
Bersimis	240	Similkameen	195
St-François	174	Canoe	156
St-Augustin	145	Spillimacheen	105
Chaudière	120	Kicking Horse (to head of Wapta Lake)	52
Richelieu (to mouth of Lake Champlain)	106	Illecillewaet	48
Churchill (to head of Ashuanipi)	532	Fraser	850
Saint John	418	Thompson (to head of North Thompson)	304
Tobique (to outlet of Nictau Lake)	92	North Thompson	210
du Petit-Mécatina	340	South Thompson (to head of Shuswap)	206
Natashquan	255	Shuswap	115
Exploits	153	Nechako (to head of Eutsuk Lake)	287
Eagle	145	Stuart (to head of Driftwood)	258
Miramichi	135	Chilcotin	146
Gander (to head of Northwest Gander River)	109	West Road	141
Nepisiguit (to outlet of Nepisiguit Lake)	75	Quesnel (to head of Mitchell Lake)	126
St. Mary's (to head of North Nelson)	59	Lillooet	110
Mersey (to outlet of 11 Mile Lake)	58	Bridge	88
Bay du Nord	41	Skeena	360
Pipers Hole	23	Bulkley (to head of Maxam Creek)	160
		Stikine	335
		Nass	236
		Homathko	85
FLOWING INTO HUDSON BAY AND HUDSON STRAIT			
Nelson (to head of Bow)	1,600	FLOWING INTO THE ARCTIC OCEAN	
(to outlet of Lake Winnipeg)	400	Mackenzie (to head of Finlay)	2,635
Saskatchewan (to head of Bow)	1,205	Peace (to head of Finlay)	1,195
South Saskatchewan (to head of Bow)		Smoky	306
Red Deer	450	Finlay	250
Bow	365	Parsnip	145
Oldman	225	Athabasca	765
North Saskatchewan	800	Pembina	340
Battle (to head of Pigeon Lake)	354	Liard	693
Red (to head of Sheyenne)	545	South Nahanni	350
Assiniboine	665	Fort Nelson (to head of Sikanni Chief)	321
Winnipeg (to head of Firesteel)	505	Pettitot	251
English	382	Hay	436
Fairford (to head of Manitoba Red Deer)	425	Peel (mouth of west channel to head of Ogilvie)	425
Churchill (to head of Churchill Lake)	1,000	Arctic Red	310
Beaver (to outlet of Beaver Lake)	305	Slave (from Peace River to Great Slave Lake)	258
Severn (to head of Black Birch)	610	Fond du Lac (to outlet of Wollaston Lake)	172
Albany (to head of Cat)	610	Back (to outlet of Muskox Lake)	605
Thelon	562	Coppermine	525
Dubawnt	523	Anderson	430
La Grande-Rivière (Fort George River)	555	Horton	384
Koksoak (to head of Caniapiscau)	543		

1.6 Areas of major islands, by region

Region and island	Area sq miles	Region and island	Area sq miles
Baffin Island	195,928	HUDSON BAY AND HUDSON STRAIT	
QUEEN ELIZABETH ISLANDS		Southampton	15,913
Ellesmere	75,767	Coats	2,123
Devon	21,331	Mansel	1,228
Axel Heiberg	16,671	Akimiski	1,159
Melville	16,274	Flaherty	612
Bathurst	6,194	Nottingham	530
Prince Patrick	6,119	Resolution	392
Ellef Ringnes	4,361	Vansittart	385
Cornwallis	2,701	Akpatok	349
Amund Ringnes	2,029	Salisbury	311
Mackenzie King	1,949	Big	310
Borden	1,079	White	305
Cornwall	872	Loks Land	162
Eglinton	595		
Graham	532	PACIFIC COAST	
Lougheed	505	Vancouver	12,079
Byam Martin	444	Graham	2,456
Île Vanier	435	Moresby	1,007
Cameron	409	Princess Royal	869
Meighen	369	Pitt	531
Brock	295	Banks	382
King Christian	249	King	312
North Kent	228	Porcher	201
Emerald	212	Nootka	197
Alexander	187	Aristazabal	162
Massey	167	Gilford	148
Little Cornwallis	159	Hawkesbury	141
ARCTIC ISLANDS SOUTH OF QUEEN ELIZABETH ISLANDS		Hunter	140
Victoria	83,896	Calvert	127
Banks	27,038	Texada	116
Prince of Wales	12,872	Swindle	110
Somerset	9,570	McCauley	106
King William	5,062	Louise	106
Bylot	4,273	Quadra	104
Prince Charles	3,676	ATLANTIC COAST	
Stefansson	1,723	Newfoundland and Labrador	
Richards	836	Newfoundland (main island)	42,031
Air Force	664	South Aulatsivik	176
Wales	439	Killinek	104
Rowley	421	Fogo	98
Russell	363	Random	96
Jens Munk	355	New World	73
Langley and Ellice	301	Tunungayualok	72
Bray	266	West Okak	69
Foley	246	Paul	69
Royal Geographical Society Islands	235	Gulf of St. Lawrence	
Sillem	186	Cape Breton	3,981
Matty	184	Anticosti	3,066
Spicer Islands	177	Prince Edward	2,184
Koch	177	Boularderie	74
Jenny Lind	162	Shippegan	58
Prescott	159	Bay of Fundy	
Crown Prince Frederick	155	Grand Manan	53

1.7 Temperature and precipitation data for typical stations in various districts

District and station	Temperatures (Fahrenheit)				Av. dates of freezing temperatures (32°F or lower)		Precipitation		
	Mean Jan.	Mean July	Highest on record	Lowest on record	Last in spring	First in autumn	Total (all forms) in.	Snowfall in.	Av. number of days (all forms)
NEWFOUNDLAND									
Island									
Belle Isle	14.7	48.9	73	-31	June 21	Sept. 26	35.16	94.5	149
Gander A	21.1	61.7	96	-17	June 4	Oct. 5	42.45	139.7	204
St. Andrew's	25.6	59.0	81	-11	June 3	Sept. 24	43.79	77.3	176
St. John's A	25.2	59.5	87	-10	June 3	Oct. 12	59.50	143.2	210
Labrador									
Cartwright	8.4	55.2	97	-36	June 20	Sept. 9	37.26	170.8	179
Goose A	2.6	60.5	100	-38	June 6	Sept. 17	34.52	161.1	176
MARITIME PROVINCES									
Prince Edward Island									
Charlottetown A	19.9	65.2	94	-18	May 17	Oct. 15	44.40	120.1	169
Nova Scotia									
Annapolis Royal	25.0	65.0	91	-17	May 19	Oct. 2	47.42	85.9	149
Halifax	26.3	65.0	94	-13	May 1	Nov. 1	51.92	83.0	152
Sydney A	24.0	64.3	95	-13	May 23	Oct. 16	52.78	113.4	179
Yarmouth A	27.2	61.5	86	-6	May 2	Oct. 24	50.52	80.5	157

1.7 Temperature and precipitation data for typical stations in various districts (continued)

District and station	Temperatures (Fahrenheit)				Av. dates of freezing temperatures (32°F or lower)		Precipitation		
	Mean Jan.	Mean July	Highest on record	Lowest on record			Total (all forms) in.	Snowfall in.	Av. number of days (all forms)
	Last in spring	First in autumn							
MARITIME PROVINCES (concluded)									
New Brunswick									
Chatham A	15.2	66.6	100	-31	May 22	Sept. 21	41.38	121.8	152
Grand Falls	10.6	65.0	98	-46	May 24	Sept. 21	40.22	104.4	105
Moncton A	17.7	65.5	99	-26	May 23	Sept. 23	43.27	123.5	156
Saint John A	19.3	62.8	94	-28	May 18	Oct. 2	50.66	80.6	149
QUEBEC									
Northern									
Fort Chimo A	-10.1	52.5	90	-52	June 27	Aug. 30	19.05	93.2	155
Inoucdjouac (Port Harrison)	-12.4	48.1	86	-51	July 1	Sept. 4	14.00	48.4	133
Nitchequon	-9.3	56.5	90	-57	June 13	Sept. 13	30.09	112.1	192
Schefferville A	-8.9	54.6	89	-59	June 18	Aug. 31	28.44	132.1	188
Southern									
Bagotville A	3.8	64.1	96	-46	May 26	Sept. 18	36.87	134.5	177
Montreal McGill	16.0	70.9	97	-29	Apr. 22	Oct. 23	39.33	95.7	164
Pointe au Père	12.3	59.7	90	-33	May 19	Sept. 28	33.41	112.5	135
Quebec A	11.1	66.6	96	-33	May 18	Sept. 28	42.85	128.6	164
Sept Îles A	7.0	59.2	90	-46	May 30	Sept. 17	42.92	166.6	146
Sherbrooke	14.7	68.1	98	-42	May 12	Sept. 27	38.29	96.3	170
ONTARIO									
Northern									
Kapuskasing A	-0.8	62.4	97	-48	June 13	Sept. 5	34.31	126.7	186
Sioux Lookout A	-1.6	65.1	96	-51	May 29	Sept. 20	29.19	93.2	165
Thunder Bay A	5.4	63.5	96	-42	May 31	Sept. 10	29.07	87.4	141
Trout Lake	-11.4	60.7	96	-54	June 11	Sept. 16	23.51	83.6	158
Southern									
London A	21.2	68.9	98	-25	May 9	Oct. 6	36.40	79.2	165
Ottawa A	12.3	69.2	100	-33	May 11	Oct. 1	33.50	84.9	152
Parry Sound	14.9	66.8	100	-42	May 14	Oct. 2	40.16	116.8	158
Toronto	24.1	71.3	105	-27	Apr. 20	Oct. 30	31.10	55.5	134
Windsor A	24.3	72.1	101	-15	Apr. 29	Oct. 20	32.91	40.8	137
PRAIRIE PROVINCES									
Manitoba									
Churchill A	-17.7	53.6	91	-49	June 22	Sept. 12	15.61	72.4	141
The Pas A	-8.3	64.3	98	-57	May 28	Sept. 20	17.70	61.9	128
Winnipeg A	-0.9	67.5	105	-49	May 25	Sept. 21	21.06	51.7	121
Saskatchewan									
Regina A	0.9	66.0	110	-58	May 27	Sept. 27	15.66	45.2	114
Saskatoon A	-1.7	65.8	104	-54	May 27	Sept. 15	13.88	44.3	103
Swift Current A	6.9	65.7	102	-45	May 28	Sept. 19	15.34	48.7	112
Alberta									
Beaverlodge CDA	5.2	60.0	98	-54	May 22	Sept. 7	17.90	72.3	129
Calgary A	12.3	61.7	97	-48	May 28	Sept. 12	17.21	60.6	113
Edmonton Ind. A	5.5	63.5	94	-55	May 14	Sept. 19	17.58	52.0	121
Medicine Hat A	10.2	68.4	108	-51	May 17	Sept. 20	13.69	47.9	89
BRITISH COLUMBIA									
Pacific Coast and Coastal Valleys									
Estevan Point	40.1	56.9	84	7	Apr. 5	Nov. 18	119.21	13.5	203
Langara	36.5	54.3	78	6	Apr. 3	Nov. 26	65.97	24.1	248
Prince Rupert	35.3	56.4	90	-6	Apr. 19	Nov. 5	95.06	44.5	227
Vancouver	36.3	63.4	92	0	Mar. 31	Oct. 30	42.05	20.6	161
Victoria									
Gonzale Hts	39.3	60.2	95	4	Feb. 28	Dec. 9	25.87	12.9	142
Southern Interior									
Glacier	11.6	57.9	98	-32	June 12	Sept. 6	58.77	381.7	192
Kamloops A	21.2	69.6	103	-35	May 5	Sept. 28	10.26	30.3	90
Penticton A	26.7	68.2	105	-17	May 10	Oct. 1	11.66	27.2	100
Princeton A	17.4	63.6	107	-45	June 3	Sept. 12	14.13	61.8	115
Central Interior									
Barkerville	14.3	54.1	96	-52	June 29	Aug. 18	45.23	228.9	185
McBride	15.6	60.6	100	-50	June 9	Sept. 1	20.65	77.7	128
Prince George A	10.7	58.9	94	-58	June 10	Aug. 28	24.43	91.9	162
Smithers A	12.9	58.2	93	-47	June 10	Sept. 1	20.17	77.7	158
Northern Interior									
Atlin	2.2	54.6	87	-58	June 5	Aug. 28	11.15	47.8	86
Dease Lake	-2.8	54.7	93	-60	June 29	Aug. 13	15.53	73.5	143
Fort Nelson A	-9.8	62.1	98	-61	May 24	Sept. 5	17.57	75.4	130
Fort St. John A	1.0	60.6	92	-53	May 20	Sept. 9	17.71	81.2	128
Smith River A	-12.1	57.4	92	-74	June 21	Aug. 11	18.32	83.3	148
YUKON TERRITORY									
Dawson	-19.5	59.9	95	-73	May 26	Aug. 27	12.81	53.7	120
Snag A	-18.7	57.0	89	-81	June 18	Aug. 9	14.16	55.3	118
Watson Lake A	-13.6	58.9	93	-74	May 30	Sept. 3	17.01	89.5	153
Whitehorse A	-2.0	57.3	94	-62	June 5	Sept. 1	10.24	50.3	118

1.7 Temperature and precipitation data for typical stations in various districts (concluded)

District and station	Temperatures (Fahrenheit)				Av. dates of freezing temperatures (32°F or lower)		Precipitation		
	Mean Jan.	Mean July	Highest on record	Lowest on record			Total (all forms) in.	Snowfall in.	Av. number of days (all forms)
					Last in spring	First in autumn			
NORTHWEST TERRITORIES									
Mackenzie Basin									
Fort Good Hope	-23.8	60.7	94	-68	June 3	Aug. 19	11.17	48.8	101
Fort Simpson A	-17.7	61.0	93	-64	May 31	Aug. 29	13.51	54.3	126
Hay River A	-13.9	60.1	93	-55	June 6	Sept. 11	13.38	65.0	109
Barrens									
Baker Lake	-28.5	51.3	82	-58	June 25	Aug. 31	8.38	35.0	96
Chesterfield	-25.3	47.6	86	-60	June 29	Sept. 6	10.37	44.4	98
Coppermine	-21.0	48.8	90	-58	June 27	Aug. 21	8.51	40.1	110
Arctic Archipelago									
Clyde	-16.4	40.2	72	-50	July 13	July 18	8.12	60.2	94
Eureka	-33.9	41.9	67	-64	June 27	Aug. 5	2.30	15.1	52
Frobisher Bay A	-15.1	46.3	76	-50	June 30	Aug. 29	16.34	97.2	135
Mould Bay	-28.9	38.6	60	-65	July 12	July 19	3.40	23.6	73
Resolute A	-26.6	39.7	65	-62	July 10	July 20	5.37	31.0	94

A = Airport, Ind. A = Industrial Airport.
CDA = Canada Department of Agriculture.

1.8 Total area classified by tenure, 1972 (sq miles)

Item	Province or territory					
	Nfld.	PEI	NS	NB	Que.	Ont.
Federal Crown lands other than national parks, Indian reserves and forest experiment stations	158	5	64	519	455 ¹	416
National parks	846	7	513	165	303	737
Indian reserves	—	3	44	65	300	2,588
Federal forest experiment stations	—	—	—	35	1	40
Privately owned land or land in process of alienation from the Crown	6,836	2,051	14,665	15,347	43,500	45,955
Provincial or territorial lands other than provincial parks and provincial forests	148,121	100	1,019	11,062	468,823	356,918
Provincial parks	107	4	19	83	75,000	5,928
Provincial forests	117	14	5,101	1,078	6,478	—
Total	156,185	2,184	21,425	28,354	594,860	412,582
	Man.	Sask.	Alta.	BC	YT and NWT	Canada
Federal Crown lands other than national parks, Indian reserves and forest experiment stations	96	2,059	1,172	279	1,488,738 ²	1,493,961
National parks	1,148	1,496	20,882 ³	1,716	22,090 ⁴	49,903
Indian reserves	827	2,268	2,549	1,309	—	9,953
Federal forest experiment stations	—	—	23	—	—	99
Privately owned land or land in process of alienation from the Crown	55,891	110,546	100,794	20,869	93	416,547
Provincial or territorial lands other than provincial parks and provincial forests	184,238 ⁵	13,485	118,241	213,481	1,058 ⁶	1,516,546
Provincial parks	3,385	1,822	2,357	10,664	—	99,369
Provincial forests	5,415	120,024	9,267	117,937	—	265,431
Total	251,000	251,700	255,285	366,255	1,511,979	3,851,809

¹ Includes Gatineau Park (137.5 sq miles) and Quebec Battlefields Park (0.36 sq mile) which are under federal jurisdiction but are not technically national parks.
² Includes 2,860 sq miles set aside but not yet designated as a national park under the National Parks Act.
³ Includes that part of Wood Buffalo Park in Alberta (13,840 sq miles).
⁴ Includes that part of Wood Buffalo Park in Northwest Territories (3,460 sq miles).
⁵ Includes 2,195 sq miles under lease.
⁶ Federal Crown lands transferred to the administration of the Yukon Territory and Northwest Territories encompassing established communities.

Sources

- 1.1, 1.2, 1.6 Topographical Survey Directorate, Surveys and Mapping Branch, Department of Energy, Mines and Resources.
- 1.3, 1.4, 1.5 Canadian Hydrographic Service, Marine Sciences Directorate, Department of the Environment.
- 1.7 Atmospheric Environment Service, Department of the Environment.
- 1.8 Federal government departments supplied information for first four items and the territories; provincial government departments provided all remaining figures.

Chapter 2

History

It is 50 years since the *Canada Year Book* included a chapter on Canadian history and it seemed appropriate to inaugurate the new format with a review of the historical background to the events recorded elsewhere in the book.

The first part of the chapter describes the present knowledge of Canada's earliest inhabitants. The second covers the early explorations which opened up the country to European colonization. The third section sketches the political and economic evolution and the fourth part discusses the events of this century.

2.1 Canada before Cartier

The following outline of Canada's prehistory updates an article on Canadian archaeology that appeared in the *1968 Canada Year Book*. Since archaeology is a cumulative discipline such periodic revisions are necessary. Future research will undoubtedly modify many aspects of the present outline but the very fact that a revision is needed reflects the increasing pace and quality of archaeological research in Canada. For a history of this archaeological research the reader is referred to the original article.

2.1.1 Prehistory of eastern Canada

Eastern Canada, consisting of Ontario, Quebec and the Atlantic Provinces south of the treeline, can be roughly divided into two major archaeological areas — Northern and Southern. Physiographically, the Northern Area coincides with the Canadian Shield and the predominantly coniferous forests that cover northern Ontario, most of Quebec, and Newfoundland. The Southern Area incorporates southern Ontario, the Eastern Townships, the upper St. Lawrence Valley of Quebec, and the Maritime Provinces, an area of predominantly hardwood forests.

There is clear evidence that the faunal and floral resources of the Southern Area were able to support a far greater prehistoric population than the less kindly endowed Northern Area. The richer archaeology of the south, however, has been complicated by the development of local cultural groups which interacted with each other and with outside areas in a highly complex fashion. Conversely, the Northern Area is characterized by a high degree of cultural similarity which allows certain general interpretations to be drawn from relatively limited archaeological data. In both areas, the maritime-adapted cultures differed significantly from contemporaneous interior cultures. Indeed, along the southern and eastern coastal regions of the Northern Area, Indian and Eskimo cultures replaced one another on more than one occasion as major climatic changes favoured the maritime-adaptive patterns of one group over the other.

The earliest evidence of man in eastern Canada dates between 10,000 and 11,000 years ago. During this period, small bands of hunters roamed the Southern Area near the edge of the glacier which covered the north. These people, referred to as the Clovis culture, were part of an extensive but thinly distributed population which entered the New World from Asia and rapidly occupied most of North America.

In western North America, the Clovis culture became differentiated into a number of regional complexes, collectively termed Plano. The Plano people, like their Clovis ancestors, were big-game hunters. Eastward penetration by Plano peoples seems limited to the Southern Area of Ontario and the southern fringe of the Northern Area of the same province which was still partially covered by glacial ice and associated glacial lakes 8,000 to 9,000 years ago. Although the data are very incomplete, it appears that the earlier Clovis population in the east evolved into various regional complexes called Archaic. Early representatives of the Archaic cultures, therefore, already occupied most of eastern Canada before the eastward movement of the Plano people began. Indeed, a number of sites have produced associated early Archaic and Plano artifacts indicating that the two populations were, on occasion, in direct contact with one another.

Through a process of gradual change, the Archaic population of the Southern Area became more diversified with numerous local varieties of culture developing in a number of different directions. There is evidence that by 3500 B.C., polished stone tools such as adzes and

finely ground slate dart heads were used as they are found for the first time along with a wide range of flaked stone implements and bone artifacts. Associated with this complex was an elaborate burial cult involving the use of red ochre and grave offerings. The subsistence pattern of the Archaic populations became more diversified than the preceding pattern of the Clovis and Plano hunters. Although big game was still of primary importance, a significant portion of the diet stemmed from smaller animals, fish and wild vegetable foods. In the Northern Area, a variety of Archaic, termed the Shield Archaic, was apparently developing in a parallel fashion. This northern variant, with its large knives, scraping implements, distinctive dart heads, and general absence of polished stone tools, drifted eastward following the caribou who were then reoccupying the territory vacated by the retreat of the continental ice sheet.

Contrary to the regional variations seen in the Archaic of the south, the northern culture exhibits amazing similarity over enormous tracts of land. An exception to this occurs in the Atlantic coastal region and Newfoundland where a distinctive maritime-adapted population developed early in the 3rd millennium B.C. The material culture of these coastal peoples shares some similarities with Archaic groups of the Southern Area. However, considerable future archaeological research is yet required to determine the full extent of this relationship.

In the Southern Area, about 3,000 years ago, a number of changes took place among the Archaic peoples, marking the beginning of what is known as the Woodland period, the most notable being the introduction of a ceramic technology. Stylistic changes can also be seen in the flaked stone tool inventories. Burial practices became even more elaborate; burial mounds, exotic trade materials and elaborately decorated artifacts are typically associated with these burials. The subsistence base for the early stages of this period remained essentially unchanged. In the western portions of the Northern Area, ceramics appeared approximately 300 to 400 years later. To the east, among the Algonkian-speaking peoples of northern Quebec and Labrador, the basic Archaic way of life continued with only minor Woodland influence.

During the Woodland period, the gradual development and evolution of many of the historic native populations can be traced in the archaeological record. The events which led to the historic Huron, Petun, Neutral and St. Lawrence Iroquois are relatively well known. It is generally accepted that the ancestry of these peoples represents an indigenous development, rather than extensive migrations of peoples from other areas. One of the most significant factors influencing the development of the Iroquois was the acquisition of corn, introduced from the south between 500 and 800 A.D. This change in the subsistence base had a gradual, yet profound effect on the settlement pattern and social life of these people. Villages grew as great numbers could be supported by an increased food supply. Daily life became increasingly



Rock paintings are widely distributed throughout the Shield country of Ontario, Manitoba, and Saskatchewan. They were still being produced during the historic period and are believed to be associated with certain religious rites. This particular painting is located near the city of Thunder Bay, Ontario. (*Archaeological Survey of Canada*)

sedentary as more emphasis was placed on plant crops as a food source. Population pressures contributed to greater rivalry between tribal groups or villages, evidenced by the appearance of palisaded villages prior to 1000 A.D. Before 1450 A.D. cultivated beans were acquired, and squash and sunflower seeds appear even earlier, providing additional food sources to this largely sedentary existence.

In the Northern Area during the Woodland period the development that led to the historic Ojibwa, Algonkin, Cree and Montagnais is not characterized by a similar change in the subsistence pattern as with the Iroquois. This is also true of the ancestral Micmac, Malecite and other maritime populations. In these areas the social and economic system was adapted to the surrounding natural environment and does not appear to have changed significantly from earliest times.

2.1.2 Prehistory of western Canada

Western Canada, as described here, is the area lying west of Ontario and south of the Yukon and Northwest Territories. It is an area of extremely varied topography, climate and natural resources, features that strongly affected the distribution and density of the aboriginal population.

The date of man's first arrival in the area, coming from northeast Asia via the Bering Strait, remains uncertain. The crucial factors include the chronology of the advances and recessions of the Cordilleran and Continental glaciations and the question of the extent and duration of the Bering Strait land bridge — matters still in dispute. Human occupation has been documented to the south within the period of the last major glacial advance, indicating penetration of western Canada at some earlier date. However, evidence for such earlier movements is still under study and cannot be summarized at the present time. The oldest recognized cultures date no earlier than 9,000 to 11,000 years ago.

These cultures are represented by surface finds of projectile points of styles attributed to early big-game hunters elsewhere in North America. These are relatively large lanceolate forms characterized by longitudinal fluting, and probably used as points for spears or darts. Two major styles, an earlier Clovis and a later Folsom form are differentiated in terms of degree of fluting and other attributes. Where found to the south of what is now Canada, the earlier type is often associated with kill-sites of mammoth and mastodon, and the latter with various kinds of extinct bison. In western Canada, these point types are reported only from the southern part of the prairie area, suggesting that perhaps these cultures were replaced by later ones before the northern part of the prairie region was inhabitable. On the other hand, fluted points have been found far to the northwest, in unglaciated parts of Alaska; their absence from the intervening area would seem to indicate that they may have been destroyed by subsequent glacial action.

The succeeding complexes, generally dated from about 8000 to 5000 B.C., are characterized by lanceolate points lacking flutes and exhibiting a fine parallel flaking technique. They derived directly from the earlier point styles and are part of what is called the Plano tradition. Big-game hunting continued to be the basis of the economy, but the number and distribution of the finds indicate an increase in population and an expansion northward into areas not previously occupied.

Perhaps contemporary with the early big-game hunters of the prairies was a complex characterized by the occurrence of bipointed, leaf-shaped projectile points. The centre for this complex was in British Columbia, but similar points have been reported from the north. Radiocarbon dates indicate a relatively early occupation of one site in the Fraser River canyon. However, it has been questioned whether all points of this relatively simple form necessarily represent a single cultural group or time period. In any case, the evidence from Fraser Canyon indicates a quite different economy from that east of the mountains, one in which dependence on salmon fishing already prevailed even at this early date.

In the succeeding period, lasting from approximately 3000 B.C. to about 1 A.D., a number of changes are noticeable. One is an increase in tempo, with alterations in artifact styles, particularly projectile points, following one another in more rapid succession than previously. Another is an apparent increase in the variety of food resources exploited, although this may reflect inadequate knowledge of the food economy of earlier times. Several local cultural variants now become recognizable, but the geographic distribution of certain artifact types indicates considerable contact between these different cultural groups.



Restoration of a Chilcotin semi-subterranean house structure in Anahim Lake, British Columbia plateau. The restoration is based upon archaeological and historical evidence. In the illustration the framework has been completed and sod will be used to cover the entire outside of the house. These dwellings were entered through the roof. (*Archaeological Survey of Canada*)

In the prairie region, the earlier lanceolate projectile points were gradually replaced by smaller stemmed points with indented bases. The change apparently represented an evolutionary sequence, rather than a series of sharp breaks. Contemporary with the earlier part of this sequence were large side-notched points from southern Alberta, Saskatchewan and Manitoba, which show affiliations with points from bison kill-sites and campsites in Nebraska and western Iowa. In fact, the many resemblances to what is known as the Archaic in the eastern United States and Canada suggest that people from the east were moving into the prairie area with the improvement of the climate. Although bison seem to have remained the major food source, there is now evidence of the hunting of birds and small animals and the collecting of shell fish and other foods. A number of these southern hunters also spread into the Boreal Forest sections of the Prairie Provinces and even farther north.

In the plateau of British Columbia, available evidence indicates a continuation of the pattern associated with dependence on salmon fishing. There is evidence of the diffusion of northern technologies into the area and for the first time semi-subterranean house structures appear. That the region was not isolated from the country east of the mountains is confirmed by the discovery in the plateau of projectile point types like those of the prairies and the finding of plateau artifact types in Alberta. During this period on the coast of British Columbia, a rapid adaptation to the inter-tidal resources and to the salmon migration took place. This is evidenced by a shift from a hunting technology to a fishing technology featuring an assortment of bone implements. This basic technology maintained itself throughout the whole west coast cultural development.

From approximately 1 A.D. to the beginning of historic times, further development in the prairie area centred around a dramatic increase in the importance of bison hunting. This shift followed the general adoption of the use of buffalo jumps, a hunting technique which

consisted of driving the animals over cliffs or steep declines, where they were slaughtered by hunters waiting below. Concomitant with the increasing use of this technique was a continued diminution in the size of projectile points, culminating in the appearance of small, triangular notched forms used as tips for arrows rather than for darts.

Another innovation of this period was the introduction of pottery-making. Occurring only sporadically in the early part of the period, ceramics gradually increased in importance, both in the prairie area and in the Boreal Forest. Some of the wares show close relationships to the pottery of the woodland region of Minnesota and of the middle Missouri area of North Dakota, while others occur in Canada only and are of northeastern origin. In southern Alberta an earth-lodge village clearly derived from those of the Missouri valley indicates the spread of new people into the area. North of the prairie region, mixed economies continued to prevail, generally consisting of the hunting of a variety of mammals and birds as well as fishing. Continuing relationships with the south are suggested by the appearance of small arrow points typical of the prairies, reaching as far as the southwest Yukon.

In coastal British Columbia, the way of life based on salmon fishing continued to develop. The major technological change occurred around the beginning of the Christian era with the introduction of heavy woodworking tools of pecked and ground stone. In the interior plateau country small side-notched points made their appearance at about the middle of this period, gradually replacing earlier forms, and indicating the continuation of contact with the area east of the Rockies. Also at this time, based on evidence from the Yukon, Northwest Territories, and British Columbia, the Athabaskan language stock, the most important family in the northern area, appears to have spread to its present limits.

Trade goods finally began to appear in the archaeological sites of western Canada, ushering in the historic period. At this point identifications of archaeological complexes with historic tribes such as the Chilcotin, Carrier, Hidatsa and Blackfoot, are often possible. Such attempts are made difficult by the large-scale displacement of one group by another which resulted from the introduction of the fur trade and the use of fire-arms and, in the prairie area, of the horse. Nevertheless, the assignment of archaeological sites to such widely separated groups as the Salish and the Cree proceeds with growing confidence as excavation continues.

2.1.3 Prehistory of northern Canada

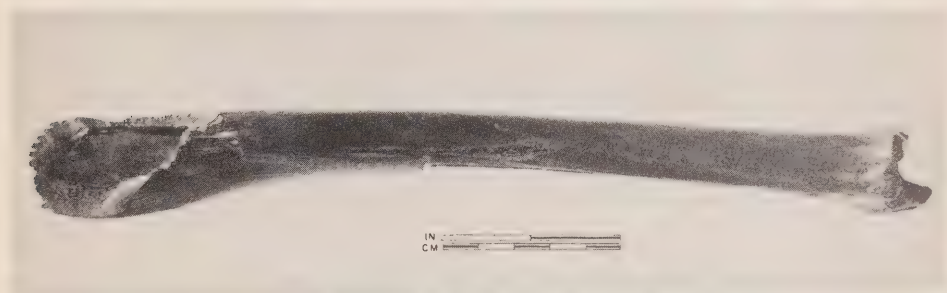
Northern Canada, as discussed here, refers to the Yukon Territory and the Northwest Territories including the Arctic archipelago. It is an area of great physiographic complexity, and the prehistory of its Indian and Eskimo occupants is equally complex. The rich sea mammal and fish resource, as well as the caribou, attracted prehistoric man into some of the most inhospitable regions of North America. Climatic fluctuations through time, that markedly affected the availability of both sea and land mammals, had a concomitant effect upon man who relied on them for food, clothing, shelter, and indeed for much of the material culture that permitted survival.

The earliest evidence of man thus far found in the New World comes from the northern Yukon Territory where, 25,000 to 30,000 years ago, hunters preyed on such animals as mammoth, horse, bison and caribou. These early hunters must have come from Siberia across the broad plain that connected Asia and North America at that time and penetrated through the interior of Alaska into the large portion of the Yukon that was free of ice during the last continental and mountain glaciation that covered the rest of Canada. Early man may have passed southward through a gap between the continental and mountain glaciers but subsequent re-advances of the ice have destroyed all traces of his passage. During the waning of the last ice sheets, bands of hunters possessing a distinctive stone tool kit including fluted spear points rapidly expanded to occupy most of the unglaciated portions of North America. These big-game hunters of ultimate Asiatic origin have been called Clovis. In southwestern Yukon and western Mackenzie District a sequence of cultural complexes can be tentatively traced from around 8,500 years ago to recent times. The evidence of palaeoecology and archaeology suggests that large herds of grazing animals such as caribou, bison and musk-ox, as well as smaller animals, were hunted on the open tundra-taiga until the area was forested 4,000 years ago.

Culturally, these people were related to their western neighbours in Alaska but all were influenced by groups of southern big-game hunters referred to as Plano. There is also evidence that northern technologies and ideas spread southward into the British Columbia plateau. The

Plano culture which evolved on the high plains drifted northward around 8,000 years ago to exploit the caribou and bison herds that were gradually occupying the territory being released by the continental glacier. In Keewatin District the Plano culture retained a relatively pure form but further to the west it appears to have intermingled with indigenous northern cultures. In the southern half of Keewatin District and southeast Mackenzie District the descendants of the Plano caribou hunters were forced out of the area around 1500 B.C. by a climatic deterioration that pushed the treeline as much as 200 miles further south. The area was largely unoccupied except for a transient appearance of an interior-adapted caribou-hunting Eskimo culture that had penetrated to the south in conjunction with the cooling climate. With this minor exception the southern half of the area was unoccupied until shortly before the beginning of the Christian era when a central Mackenzie District complex, that would eventually give rise to the historic eastern Athabaskan bands, occupied the region as well as the northern portions of the Prairie Provinces.

With the exception of the aforementioned penetration of Eskimo hunters deep into the interior around 1000 B.C., these cultures were Indian. In the west they gave rise to the Athabaskan-speaking Kutchin, Han, Tutchone, Tagish, Inland Tlingit and Kaska of the Yukon. Their linguistic and cultural kinsmen to the east in Mackenzie and Keewatin Districts included the Hare, Mountain, Bear Lake, Slave, Dogrib, Yellowknife and Chipewyan.



Canada's oldest artifact. This serrated scraper, found in northern Yukon Territory, was made by whittling and notching the upper end of a caribou leg bone. It was used to work animal skins. Since it was deposited the specimen has completely fossilized. A sample cut from the shaft was dated to around 27,000 years ago by the radiocarbon method. (*Archaeological Survey of Canada*)

The cultures that occupied the northern coastal regions of northern Canada are believed to be Eskimo. By approximately 3000 B.C., a distinctive Alaskan culture based on the seasonal exploitation of sea mammals and caribou spread eastward to occupy the northern coastal regions of the Yukon and Northwest Territories, Greenland, northern Manitoba and Quebec, and Labrador; their descendants eventually occupied the entire Newfoundland coast. As already mentioned, during the climatic deterioration following 1500 B.C. some of these Eskimo hunters, referred to collectively as the Arctic Small Tool tradition, penetrated the interior in search of the barrenland caribou herds and their distinctive tools have even been recovered from the northern fringes of Saskatchewan.

By 900 A.D., warming trends altered the ecology to favour the rapid migration of an Alaskan group of Eskimos called Thule and the Arctic Small Tool tradition population (Dorset) was replaced and absorbed by the newcomers. The Thule Eskimos were capable of exploiting the rich whale and other sea mammal resources and were eventually distributed across the northern coastal areas of the Yukon and Northwest Territories, Greenland, northern Manitoba and Quebec, and Labrador. With the gradual rise of land in the north and a shallowing of the water, the large whales disappeared and the Thule Eskimo developed into regional groups that represent the Central, Labrador, and Greenland Eskimos of the historic period. The Eskimos who historically occupied the mouth of the Mackenzie River, though related to this Thule expansion, show their closest connection with groups from the interior of western Alaska.

2.2 Exploration and settlement

The Norse sagas tell of the colonization of Iceland and Greenland in the 9th century and they also record exploratory voyages further to the west and south. Settlements in Greenland were founded about 985 A.D. by Eiríkr Thorvaldsson (Eric the Red), and some of these settlements lasted into the 16th century. Eric's son, Leifr Eriksson (Leif the Lucky) probably founded a settlement at L'Anse aux Meadows on the northern tip of Newfoundland about 1020 A.D. Carbon-14 dates on the meagre Norse remains at the site tend to confirm this date.

Norse sagas and archaeology do not always agree, but history can be used to confirm archaeology, and vice versa, and some triangulation of this obscure geography can be established within which further information can be added. Certainly a great number of voyages were made by Vikings and, later on, by other Europeans, fishermen especially, of which there is no record. Jacques Cartier (1491-1557) on his first major voyage of discovery in 1534 found a ship from La Rochelle 100 miles to the west of the Strait of Belle Isle, and directed it back onto a course for home. The voyage of John Cabot (fl. 1461-1499) in 1497 is documented in English archives, but whether he landed in Newfoundland or Nova Scotia to claim land for Henry VII is not clear. Cabot's purpose is, however, like that of Cartier, clear enough: to find land that produced things of value. Cabot found fish on the Grand Banks, something which had been known in the western ports of England and France for years, but he did not find much else of immediate value. Cartier found Indians and "*les diamants du Canada*", which later turned out to be quartz.

2.2.1 The search for riches

Canadian history thus begins as a quest for the riches of the New World. There are no voyages of discovery without incentives, and this particular stimulus is part of a continuing theme in Canadian history that lasts into the 19th and 20th centuries. Gilbert La Bine at Great Bear Lake in May 1930 was undoubtedly adding to our knowledge of Great Bear Lake but he was also looking for riches which in his case were silver, cobalt, and pitchblende. It was this search for economic gain that drove explorers westward in the 16th century. It was the basic driving force for the Spanish and Portuguese, for Cabot in 1497, Cartier in 1534, even perhaps for Champlain in 1603, many others after them, and most of all for the backers of these expeditions. No one would cross 2,500 miles of lonely, wild ocean in a small ship, no one would risk death and disease without powerful incentives. These dangers existed from the very first migrations westward in the 17th century, and it was not until the late 19th century that sea passages from Europe to North America could be thought of as reasonably safe and secure.

Many of the early enterprises of the French régime take their character from these fundamental conditions. That there were men of intelligence and high-mindedness who served New France, is, of course, beyond question — some of the Intendants, notably Jean Talon, and the Jesuits, are good examples and though the Company of 100 Associates had honest intentions they were frustrated by bad luck and the English — but most of the other early fur companies of New France, upon whom early colonization depended, fought in the court of Louis XIII for their monopoly control and made their money from the fur trade as rapidly as possible. They avoided, as much as they could, fulfilling conditions that they felt inconvenient or onerous, such as bringing out settlers.

The career of Samuel de Champlain (1567?-1635) illustrates this well. He was first an explorer with De Chastes at Tadoussac in 1603, then with De Monts in Acadia, 1605-7. When De Monts' Acadia trading privileges were revoked, Champlain returned to France, to reappear again under De Monts, to found Quebec in 1608. A new company was formed in 1610, and a whole series followed. Altogether he made some 21 voyages across the Atlantic, and died at Quebec in 1635.

Such vicissitudes illustrate the fact that the driving force behind these changes was the fur trade. This trade was mainly in beaver fur, especially the *castor gras*, prepared by being worn next to an Indian's skin all winter. Beaver was especially suited for the felting process available in France in the 17th century, and from this came the superb beaver hats so much in fashion in 17th and 18th century dress. It was in pursuit of the beaver trade that the French pushed far into the interior, to Hudson Bay, to the Mississippi valley, and reached the Canadian prairies by the early 18th century. This trade continued into the 19th century, moving farther and farther to the north and west. By 1808 Simon Fraser (1776-1862) had established fur trading

posts as far west as Fort St. James on Stuart Lake in north-central British Columbia, northwest of present-day Prince George.

The French were not the only ones interested in the fur trade. So also were the Dutch in New Amsterdam (New York) and in Fort Orange (Albany), and, after the cession of the Dutch colony to the English in 1664, still more formidable competition came from English traders. The Indians were the essential middlemen of the trade and both the French and the English vied for their loyalties.

The rivalry between the French and English in North America began early, and continued to affect the Indians for a long time. It seriously affected Indian life in the St. Lawrence Valley, Lake Ontario, Lake Erie and other Great Lakes areas, and reverberated westward from there: it also affected Indians in Hudson Bay in the late 17th century, in Newfoundland, and in Acadia, during a whole series of wars.

2.2.2 The French-English conflict

The French-English rivalry in Canada reflected the great European conflicts which began in 1689 and ended only with Napoleon's defeat in 1815. The year 1710 saw the fall of the peninsula of Nova Scotia to the English, confirmed in the Treaty of Utrecht in 1713. The French however still retained Île Royale (Cape Breton) and Île St-Jean (Prince Edward Island). They effectively occupied what is now New Brunswick and built Fort Beauséjour on the Chignecto isthmus to defend it. More important, they built Louisbourg at the southeast corner of Cape Breton Island, to defend the St. Lawrence approaches, and to act as an exchange point between New France, the French West Indies and France.

Louisbourg fell to the English in 1745, but was restored to France in the Treaty of Aix-la-Chapelle, 1748, that closed the War of the Austrian Succession. Halifax was then built



The King's Bastion Barracks, Fortress of Louisbourg, NS. Built between 1720 and 1745, the Fortress was captured by New England militia in 1745, restored to the French in 1748, recaptured by General Wolfe's forces in 1758 and destroyed in 1760. It is now being restored as a National Historic Site. (*Department of Indian Affairs and Northern Development*)

by the British government as a base to flank, and if possible to dominate, Louisbourg. The Seven Years' War (1756-1763) that followed, began with an undeclared war between Britain and France that started over the control of the Ohio valley. News of the defeat of the British army before Fort Duquesne (now Pittsburgh) in June 1755, helped to persuade the Governor of Nova Scotia, Charles Lawrence, to expel the 10,000 Acadians, an element in the colony that he believed dangerous for British control. Whether they were in fact dangerous has been much discussed since. The celebrated Acadian expulsion was to be followed later by an even more extensive *diaspora* — the Loyalist emigration from the United States after the Revolutionary war.

General James Wolfe (1727-1759) captured Louisbourg in 1758, and the following year captured Quebec City. Had France been in a position to send reinforcements to Canada in 1760, there is little doubt that Quebec could have been recaptured, for the French still held most of the rest of Canada; as it was, British ships were the first to be sighted in the St. Lawrence in May 1760, and the fall of New France became inevitable. The capitulation of Montreal followed in September 1760.

This final separation between New France and the mother country, the "old" France of Louis XV, was confirmed in the Peace of Paris of 1763. With this treaty France ceded to Britain all of her North American empire except her West Indian islands, French shore-fishing privileges on the Newfoundland coast, and the two small islands of St. Pierre and Miquelon.

Some 60,000 French Canadians and about 1,500 Acadians (who had drifted back) now faced a North America that was British from the Gulf of Mexico to Hudson Bay. A considerable debate has developed in recent years among Canadian historians over the effects of the cession on French Canadians. Some French Canadian historians argue that it had very little effect: that except for the loss of some senior French officials and the substitution of English officials and language at the upper levels of government, nothing much changed. Others, including some English Canadian historians, take the position that the cession was a disaster, making the French Canadians and Acadians a truncated people, cut off from the intellectual and physical resources of their own mother country.

Despite the scorched-earth policy that Wolfe had used ruthlessly in the environs of Quebec in the summer of 1759, the subsequent British military occupation to 1763 and the rule of Governor Murray (1760-1768) was on the whole benevolent. By force of circumstance French civil law was kept, but English criminal law was gradually adopted; both were officially recognized in the Quebec Act of 1774. What complicated matters was the immigration into the new province of Quebec by British Americans, Scots, and other English-speaking people in the 1760s and 1770s. They were to take up the main profit-making venture that Canada had: the fur trade. After the outbreak of the War of the American Revolution, 1775-1783, there was a further movement, this time of displaced farmers and gentry, mainly the former. This necessitated considerable shifts of policy, and it posed to governors like Sir Guy Carleton, Lord Dorchester (1768-78, 1786-96), formidable questions of adjustment between two quite different peoples and their different legal, religious and social systems.

Problems of this kind were partly solved in 1791 by dividing the old province of Quebec into two parts, Lower Canada and Upper Canada, each with its own legislature and legal system. About this time the old province of Nova Scotia was also split up: Prince Edward Island was established as a separate colony in 1769 (it was called the Island of St. John until 1799), and New Brunswick and Cape Breton Island were established as separate colonies in 1784, though Cape Breton was subsequently reannexed to Nova Scotia in 1820. Newfoundland was still nominally a fishing station with primitive jurisdiction and controls, and was to remain so until granted her own representative government in 1832.

2.2.3 Western explorations

To the north and the west of the Canadas lay the chartered territory of the Hudson's Bay Company, founded in 1670, comprising the enormous watershed of all the rivers flowing into Hudson Bay. Across the Rockies lay territory largely unexplored. Vitus Bering had surveyed the Bering Sea, Bering Strait, and part of the Alaskan and Kamchatkan coast for Peter the Great beginning in 1725 and continuing to 1741. The accuracy of his observations was confirmed by James Cook (1728-1779), the first Britisher to explore the west coast of Canada. This he did on his third Pacific voyage in 1776, going as far north as Bering Strait. One of



York Factory, chief depot of the Hudson's Bay Company, as it appeared at the height of its influence in 1853. The first building on this site was started in 1788 although earlier structures of the same name had been in the area since 1682. The Factory finally closed in 1957. Lithograph of a sketch by Chief Factor Alexander Hunter Murray. (*The Public Archives of Canada and the Hudson's Bay Company*)

Cook's midshipmen during this last voyage was George Vancouver (1757-1798). In 1791, as a Commander, Vancouver was sent to take control of the west coast from the Spaniards. From a base at Nootka Sound, he spent two years exploring the coasts of British Columbia and Vancouver Island. Vancouver narrowly missed meeting Alexander Mackenzie of the North-West Company who arrived at the head of Bella Coola inlet, on July 20, 1793, from Lake Athabaska. Mackenzie arrived at the Pacific just three weeks after Vancouver's exploring and surveying ships had passed.

In the years that followed it was mainly the senior wintering partners of the North-West Company who explored British Columbia. Simon Fraser (1776-1862) with tremendous fortitude and courage worked his way down the Fraser River in 1808 to tidewater. David Thompson (1770-1857) spent much of his life between 1798 and 1812 establishing new fur trading areas and working out the geography of the far western plains and especially the complexities of the Columbia River. The great enterprise that had sponsored all of these expeditions was the North-West Company of Montreal. This great Canadian company was finally amalgamated with the more efficient Hudson's Bay Company, operating from York Factory in Hudson Bay, in 1821.

During the War of 1812 the North-West Company had occupied and purchased, under threat of seizure, the American Fort Astoria, at the mouth of the Columbia River. This fort had been established by John Jacob Astor's fur company, and ended his adventures in the Oregon country. This area, around the lower Columbia in what are now the states of Washington and Oregon, was largely held by British Canadian interests, represented after 1821 by the Hudson's Bay Company. It was to continue there until the gradual drift of American settlers into the Willamette valley in the late 1830s and early 1840s made the position of the Company more difficult. The Oregon Boundary Treaty of 1846 forced the Hudson's Bay Company to move its trans-Rocky Mountain operations to Fort Victoria at the southern end of Vancouver Island.

2.2.4 The War of 1812

The War of 1812 was a war the Americans thought they won, the Canadians believed they won, and the British, who did no small share of fighting, have largely forgotten about. The war was caused by two disparate elements in the United States. There were those who were incensed at the occasionally harsh treatment of American merchant ships and seamen on the

high seas by the British Navy. This was owing to British insistence on control over neutral ships approaching Europe, then largely dominated by Napoleon. The second element in the United States was more vociferous: a group from the new western tier of states, Kentucky (1792), Ohio (1802), and Indiana Territory (a state in 1816), called the War Hawks, wanted Canada, especially Upper Canada, to be part of the United States. These elements joined to produce a clear but by no means overwhelming majority for a war resolution in the American Congress in June 1812. Canada was successfully defended, though not without difficulty, by British troops, British North American defence regiments, militia and Indians. At sea, despite some individual setbacks, the British Navy was able to control the coasts around the Atlantic seaboard. By the end of the war Britain had possession of Maine as far south as the Penobscot, and controlled Michilimackinac and part of what is now Michigan and Wisconsin.

The Peace of Ghent was made in December 1814, while the Congress of Vienna was preoccupied with the much more formidable question of a general European settlement. It was owing to these preoccupations that Great Britain accepted the *status quo ante bellum* as a definition of boundaries. The main issues between Britain and the United States were left until the Convention of 1818. This Convention regulated the North Atlantic fisheries' question and settled the western boundary between British North America and the United States as the 49th parallel from Lake of the Woods westward to the Rockies. The country west of the Rockies was left under joint occupation of both countries from the northern border of Spanish California, 42°N, to the southern border of Russian Alaska at 54° 40'N. Altogether, the settlement kept the British North American border relatively peaceful until the disruptions caused by the Rebellions of 1837.

2.2.5 The 1837 rebellion

In the 1830s serious problems arose in Lower Canada. Though similar structural and constitutional issues developed in other provinces, notably Upper Canada and Nova Scotia, in Lower Canada there was a complex of issues. There was the obvious constitutional one: an Assembly with a French Canadian majority trying to acquire, under the vigorous leadership of Louis-Joseph Papineau (1786-1871), control over an Executive Council composed mainly of British Canadians with a few French Canadian supporters. The British element wanted to keep control of the Executive Council and at the same time persuade the Assembly to spend more money on commercial development, such as improving the canal system, but the Assembly resisted. More deep-seated problems were, however, the agricultural crisis in Lower Canada caused by declining yields of wheat and other grains on old, long-used seigneurial lands, (wheat rust and declining yields became especially obvious in the area of the Richelieu valley by the 1830s), and the commercial crisis of 1837 which affected both the United States and British North America. These crises exacerbated all the other grievances.

The catalyst of the trouble was a constitutional quarrel with the British government and the Executive Council of Lower Canada. Sporadic fighting broke out in November 1837 in Montreal and warrants were issued by the Governor General for the arrest of the *Patriote* leaders. Fighting began in the Richelieu valley by mid-November and was put down by British troops and much more ruthlessly by British Canadian militia, who used the opportunity to settle numerous old scores. In Upper Canada a smaller rebellion took place under the volatile leadership of William Lyon Mackenzie (1795-1861). It too was put down by local militia — all the regular British troops having been sent to Lower Canada. Mackenzie however escaped, as had Papineau, to the United States, where both took the lead in fomenting border troubles for the next year. Americans, in New York state especially, believed that the time was now ripe for Lower Canada and Upper Canada to fall into American hands or, at the very least, that they should help the two colonies become separate republics.

2.3 Responsible government and Confederation

Lord Durham (1792-1840) was commissioned by the British government as Governor General to find the causes of the Lower and Upper Canada troubles and to recommend changes. He arrived in Quebec City in May 1838.

The result of these recommendations, incorporated in his *Report on the affairs of British North America*, was the union of the two provinces of Upper and Lower Canada into the one province of Canada in 1841. Durham believed that the French Canadians would have to be assimilated within an Anglo-Saxon community. Union was naturally disliked in Lower

Canada but, in any case, its prime purpose was to be frustrated by an alliance between French Canadian reformers under Louis-Hippolyte Lafontaine (1807-1864) and Upper Canada reformers under Robert Baldwin (1804-1858), both of whom were leaders in the movement for responsible government.

2.3.1 Toward responsible government

Responsible government had been one of Durham's recommendations, but the British government did not believe it was possible to implement it. After a change of ministry in London, however, and a great deal of manoeuvring in the province of Canada and in Nova Scotia, responsible government was effectively achieved by both in 1848. Newfoundland, Prince Edward Island and New Brunswick had their own approaches to this question though the forms of government were the same. Newfoundland and Prince Edward Island were sufficiently small and parochial that even a liberal-minded British government felt it difficult to concede responsible government to them but by 1855 all five colonies had their own working versions of the principle.

These constitutional changes of the 1840s were accompanied by rather drastic commercial ones, affecting wheat and lumber exports especially. Britain's need for wheat and lumber had grown rapidly as a result of the changes wrought by the industrial revolution. Britain lowered her customs duties on colonial produce which stimulated the export business from Canada and New Brunswick in lumber, wheat and flour. Canadian flour could be milled, by British regulation, from both Canadian and American wheat; and between 1843 and 1846 a considerable milling business was begun in the province of Canada. Then, in 1846, as a result of the pressure of bad harvests of 1845 and famine in parts of Ireland, Britain abandoned all forms of protection, eliminating the advantage enjoyed by the Canadian milling business. The preference for Canadian wheat and flour was broken and by 1848 Canada was suffering from a severe commercial crisis, aggravated by a general one which it shared with the United States. These conditions were largely responsible for the riots in Montreal in April 1849 when the Governor General, Lord Elgin (1847-1854), was harrassed as he signed the Rebellion Losses Bill. The Parliament buildings in Montreal were set on fire shortly afterward and Montreal was never to be a capital city again.

By the early 1850s the commercial depression was over, and Canada experienced its first railway boom. Railways changed all of British North America in the 1850s. The story of the inception and building of the Grand Trunk Railway, the Great Western Railway and others in the province of Canada, the European and North American in New Brunswick, the Nova Scotia railway, and long efforts to build the Intercolonial railway from Halifax to Quebec, is lengthy and complex, but the changes they produced in Canadian society were permanent. Railways made possible the growth of cities which began in the 1850s. Railways also changed the countryside as they broke down isolation. They also made possible the conceptions that were to lead to the union movement of the 1860s.

It was no accident that the 1860s were an age of political unions. Italy was made one country between 1859 and 1861; Germany was largely united in the North German Confederation of 1867; the United States defeated an attempt to split the country in the Civil War of 1861-1865. All of these events were, to a considerable degree, the concomitants of railways.

2.3.2 Events leading to Confederation

Some of the strongest forces that helped to produce Confederation were external to British North America. The American Civil War broke out in 1861 and soon created a climate of tension and unease throughout British North America, noticeably after the *Trent* crisis in November 1861, and increasingly as the war went on. Nor were these the only tensions in North America. In Mexico a revolutionary struggle had been going on since 1858, under the leadership of Juarez, and the eventual result was that Emperor Maximilian — the brother of Franz Joseph II of Austria — was shot on orders of Juarez, in June 1867. Well might Thomas D'Arcy McGee (1825-1868) declare in 1865 "...we were taught that the days of the colonial comedy of Government were over and gone, and that politics had become stern, and almost tragic for the New World". McGee himself was assassinated in 1868. These conditions made the far-reaching changes proposed by Confederation justifiable to some, essential to others, and made resistance to Confederation more difficult.

Moreover, Great Britain was going through a phase of anti-colonial attitudes, at least as far as her North American colonies were concerned. The most obvious symbols of this were the increasing reluctance to spend money on British North America, or to keep troops there, and the encouragement of the North American colonists to stand on their own feet as much as possible. British troops were indeed stationed in North America and more were sent out at the time of the *Trent* crisis, but a decade later, in November 1871, the last of the British troops left the Citadel of Quebec, leaving only Halifax with a garrison of British troops.

These external pressures would not of themselves have effected a union of British North America but they established conditions by which it was possible to justify very far-reaching changes. Internally, the driving force for change came from Canada West. That section of the province of Canada had become increasingly dissatisfied with the union of 1841, and wanted to have the political power that its million and a half people warranted. It now had half again as many people as Canada East, yet by the union constitution it had equal representation with Canada East in the Canadian Assembly. Hence arose the cry of the Reform party of Canada West, "rep. by pop.," that is, representation according to population.

John A. Macdonald and the Conservative party, and their Bleu allies in Canada East under George-Étienne Cartier (1814-1873) resisted these demands as long as they could. But by 1864 it became clear that unless some solution were found for the political demands of Canada West no government could long survive. In June 1864, a strong coalition was formed between the Conservatives and the Bleus on the one hand and the Reformers of Canada West led by George Brown (1818-1880) on the other, with the aim of achieving a British North American Confederation.

The Atlantic colonies were separated from the province of Canada by miles of forest, the mountains of Gaspé and the salient of Maine, and each had a different history and orientation. Prince Edward Island and Newfoundland were both somewhat distant from mainland concerns. Many of the Prince Edward Islanders whom George Brown met in 1864 had never left the island, and this was even more true of Newfoundlanders. Nova Scotia was a maritime colony of some importance with her ships, and those of New Brunswick, trading in the ports of the seven seas. Both Nova Scotia and New Brunswick evinced some interest in a union of the three Maritime colonies, but it was largely ephemeral. Nova Scotians had talked about both a Maritime union and a British North American union during the 1850s but none of the newspapers and few of the politicians who took part in these discussions seemed to have many practical suggestions as to how to achieve either of them.

A Maritime union conference called to meet at Charlottetown, Prince Edward Island, on September 1, 1864 showed some evidence of Maritime pressures, but mainly the pressure came from the province of Canada which wanted to present its own proposals for a Confederation of British North America. In the event, the Canadians swept the board at Charlottetown. Maritime union vanished and the Maritime delegates were caught up in the glittering Canadian proposal for Confederation, more easily since the Canadians brought with them a well-defined outline of just how it might be effected.

At the Quebec Conference in October 1864 the scheme was elaborated formally in 72 resolutions. It was accepted by the British government but then had to be ratified by the legislatures of the five colonies. The province of Canada passed it in March 1865 but a New Brunswick election at just that time defeated any further progress in the Maritime provinces. Nova Scotia was sufficiently opposed that there was no hope of passing it unless New Brunswick agreed. Prince Edward Island was to refuse to have anything to do with Confederation until special circumstances caused it to join in 1873. Newfoundland was less opposed to Confederation than Prince Edward Island, but it hesitated uneasily, and an election in 1869 defeated any hope of it joining at that time. The idea was not successfully revived in Newfoundland until 1948.

In 1866, however, strong pressure from the British government, together with threatening gestures from the United States, exemplified in the Fenian raids of April and June 1866, swung New Brunswick around, helped also by strong action from the Lieutenant-Governor of New Brunswick, Arthur Gordon (1861-1866). Nova Scotia then passed a Confederation resolution. The British North America Act was passed through the British Parliament early in 1867, and brought into effect on July 1, 1867.

The British North America Act had a number of noteworthy accomplishments to its credit, but there were also some things which it did not do. The Act effected a federal union

between Canada, New Brunswick and Nova Scotia, with provisions for the later addition of Prince Edward Island, Newfoundland, the Hudson's Bay Company's territory in the northwest, and the colony of British Columbia. It continued the old boundaries of New Brunswick and Nova Scotia as well as most of their old structures of government; and it split the province of Canada into two new provinces, Ontario and Quebec. It established a strong central government at Ottawa with the great bulk of the legislative and taxing power. It gave to the provinces a certain modest share of legislative powers exclusively their own. The only breaches in this exclusive provincial control over their own sphere of power lay in the federal right of veto of provincial legislation, and certain rights of appeal of a minority against breaches of their educational privileges. What the British North America Act did not do was to spell out how these governments were to work; it was simply assumed to be the British system of cabinet executive government responsible to an elected legislature. Thus the Canadian Constitution is partly written, and partly unwritten, the latter being quite as important in its own way as the former.



A Father of Confederation and probably its chief architect, Sir John A. Macdonald, 1815-1891, was the new nation's first Prime Minister. (*Portrait by Mrs. Irma Coucill*)

Sir John A. Macdonald was the first Prime Minister of the new Dominion of Canada, and created a Cabinet on national lines. Except for the years 1873-1878 he was to remain in power until he died in 1891. Manitoba, formed out of North-Western Territories which had been bought from the Hudson's Bay Company, joined Confederation in 1870; British Columbia joined in 1871 and Prince Edward Island in 1873.

The problems of governing the vast aggregations of western territories were formidable, and the Canadian government had as yet very little knowledge, experience, or even understanding of them. There would have been no province of Manitoba at all in 1870 but for the resistance of Red River people to the Canadian takeover from the Hudson's Bay Company. The Métis of Red River, under the leadership of 28-year-old Louis Riel (1841-1885) forced the Canadian government into granting provincial status to Manitoba.

Similar attitudes on the part of Ottawa affected the early history of the vast North-West Territories. Treaties with Indians were begun, but other problems were not considered very seriously until 1873. Partly as a result of the infiltration of American fur traders into what is now Alberta, and partly as a result of the Cypress Hills massacre in May 1873, the North-West Mounted Police was organized and dispatched westward in 1873, taking up a series of posts across the west, beginning in the summer of 1874.

2.3.3 Building a nation

At this early period, Canada was still mainly a moral and political union, a union on paper, without real economic and physical links to hold it together. Businessmen and MPs, travelling to Montreal or Ottawa from the Maritimes, had to go via Portland, Maine; MPs from Manitoba travelled via St. Paul, Minnesota; those from the west coast had to go to San Francisco by ship and thence eastward by the Union Pacific Railway. Canada needed to be joined together by railways. The first of these, the Intercolonial Railway, was embarked upon almost at once after 1867 with the government surveying the route, constructing the line and operating the railway. It went from Halifax via Moncton, Campbellton and the Matapédia valley to Quebec. The first through train from Halifax to Quebec arrived at Lévis on July 6, 1876.

The construction of the 561-mile Intercolonial Railway was by no means easy even with an Imperial government guarantee to back the required bond issues of the Canadian government. The building of the Pacific Railway, nearly 2,000 miles from North Bay, Ont. to Vancouver, BC, was far more formidable. In 1871, when British Columbia joined Confederation, the Macdonald government committed itself to starting the railway within two years and completing it within ten. This was impossible. For one thing, surveys of routes had to be made and no one had any idea where an economical and efficient route through British Columbia would be found. As a result of early experience with government construction of the Intercolonial, the Macdonald government decided to allow a private company to build the Pacific Railway. Macdonald knew the project was sufficiently large to absorb more than the available capital in Canada as Sandford Fleming (1827-1915) had estimated it would need at least \$100 million. Toronto and Montreal interests were both interested in building such a railway and Americans also wanted to supply capital. All these conflicting interests culminated in the famous Pacific Scandal which brought down the Conservative government of Sir John A. Macdonald in 1873.

The new Liberal Prime Minister, Alexander Mackenzie (1822-1892), pushed forward the work of government surveying and construction as government resources allowed. Throughout his term of office he struggled with the enormous costs of Sandford Fleming's surveys in British Columbia, and began construction of the line between Fort William and Winnipeg. Five years later the Conservative government was returned to office but progress on railway construction was hampered by lack of government finances until the fall of 1880 when a private company was formed that was strong enough financially to undertake the enormous task. The Canadian Pacific Railway Company began work and within five years the last spike was hammered home, thanks to a dynamic general manager, William Van Horne (1843-1915) and a good deal of support from the Canadian government. Furthermore, the government had constructed the most difficult part of the railway between Kamloops and Vancouver.

It was the CPR that enabled the Macdonald government to transport Canadian troops west to defeat the combined Métis-Indian forces in the North-West rebellion of March to May 1885. The North-West Mounted Police had controlled and pacified the west from 1873 onward, but could not handle a large-scale outbreak such as that of 1885. The trial and execution of eight Indians for the massacre at Frog Lake and other incidents of the rebellion did not arouse much controversy in the east but the execution of Louis Riel (1844-1885), the leader of the rebellion, did. Although the Catholic Church condemned Riel as an apostate, his fate engaged the sympathies of French Canadians. The Macdonald government was caught between two factions: Ontarians and some westerners who demanded Riel's death, and Québécois and other westerners who, while admitting Riel was guilty, felt that the Macdonald government was also guilty of having provoked a rebellion in the first place. One result of Riel's execution was that the Conservative party was weakened in Quebec sufficiently to allow Honoré Mercier (1840-1894) win a narrow victory in the 1886 election. The party recovered sufficiently to defeat Mercier decisively in 1892, however, it was never quite able to disassociate itself from the Riel affair.

Macdonald died in June 1891 and was succeeded by Sir John Abbott who in turn was succeeded by Sir John Thompson (1844-1894) who took office in December 1892, the first Nova Scotian to become Prime Minister of Canada. Thompson died suddenly in 1894 and the Conservative government fell in 1896 after 18 years in power, on a complicated and difficult issue, the Manitoba Schools Question. This was one of several awkward questions of provincial minority rights to separate schools. In the 1870s Manitoba had developed its

separate school system from its own local needs and traditions. By 1890, however, Protestant immigration had reduced the Roman Catholic population to a relatively small minority and the Manitoba government felt justified in establishing a "non-denominational" school system; but the Catholics felt it was a Protestant system in disguise. The Catholics had a good case against the new system on legal and constitutional grounds and the case of *Barrett vs. Winnipeg* went to court. The Supreme Court of Canada in 1892 accepted the Catholic contention, but that decision was thrown out by the Privy Council in London. The political remedies that were applied, as by the British North America Act they could be, brought down the Conservative government of Sir Mackenzie Bowell (1823-1917). Wilfrid Laurier (1841-1919), the Liberal leader, promised to negotiate the question with the Liberal government of Manitoba and, despite a good deal of opposition from the hierarchy of the Roman Catholic church, he won the election of 1896 defeating the Conservatives under the leadership of Prime Minister Sir Charles Tupper.

2.4 The 20th century

The Liberal government of Sir Wilfrid Laurier lasted for 15 years. It is customary to say that his régime inaugurated the real beginning of Canada's considerable growth in the 20th century, but the foundation for this growth had already been laid. Canada's industrial revolution had started the trend to the cities although even in 1900 70% of Canadians still lived in communities with a population of less than 500. Telephones came into general use in the 1880s and electric light began to be used about the same time. Typewriters were frequent in offices by the end of the 1890s. Even horseless carriages had begun to appear, although the bicycle was the current rage of the 1890s. Not all of these changes were considered good, however useful they may have been. There were complaints of the ghastly cribbing of wires and poles that had already substantially disfigured the neat-looking streets of the 1860s.

The Laurier years are also celebrated for the considerable immigration into the Canadian west. Factories and the transportation system to sustain such growth were already established, and two more transcontinental railways were added to Canada in those optimistic years before 1914. Canada's population in the 1901 Census was 5.4 million; ten years later it was 7.2 million with the growth heaviest in the west. Canada's wheat production was 56 million bushels in 1901; it leaped to 231 million in 1912.

Alberta and Saskatchewan were created as separate provinces in 1905. Ontario and Manitoba attained their present boundaries in 1912 and Quebec was extended northward to include mainland Ungava.

Laurier's Liberal government fell in 1911, due partly to a vigorous Quebec reaction against Laurier's new Canadian Navy. Even more important was a strong Canadian nationalist reaction to the proposed reciprocity treaty with the United States. This nationalism was taken full advantage of by the Conservatives under Robert Borden (1854-1937), who carried the election with 134 Conservatives to 87 Liberals. The Borden government drew much of its support from Ontario and some from Manitoba. The Maritime Provinces, Quebec and the rest of the western provinces returned a majority of Liberal members supporting Laurier.

The Conservative government's basic strength lay in its persuasive mixture of Imperial glory and Canadian nationalism. At that time it was not easy to separate them, as Laurier had found out on the occasion of the Diamond Jubilee in 1897 and during the Boer War, 1899-1902. A Canada independent of Britain was not easy to imagine: but while the kind of truculence the United States exhibited during the Alaskan boundary arbitration of 1903 seemed to recommend continued reliance on the British, the way in which Britain had conceded so many points to the Americans showed the merits of Canadian independence. Laurier was much influenced by the young generation of Canadian nationalists from Quebec, led by Henri Bourassa (1868-1952), grandson of Papineau, whose desire to be free of British entanglement was to reappear as English Canadian nationalism 50 years later. Conservatives were convinced that the Liberals, by backing away from Imperial commitments as Laurier had, were inviting disaster. Cartoons in Conservative papers in the 1911 campaign showed Conservative attitudes: the American tiger getting ready to gobble up Canada the moment it stepped out from British protection.

The naval issue also revolved around these two opposing points of view. Laurier sponsored, and Parliament passed, an Act in 1910 establishing the structure for a Canadian Navy. Conservative naval policy, on the other hand, was Imperial in character. It envisaged a

money contribution to the British Navy sufficient to build three dreadnoughts – then the latest weapon in naval design – to be used by the British Navy and ultimately perhaps to become part of a Canadian one. Borden did not offer this gift unconditionally: in return he wanted a Canadian voice in determining British naval and foreign policy. This was something that the British found difficult, if not impossible, to concede. However, after forcing the Naval Aid Bill through the House of Commons in 1912 under new rules of closure the government had to abandon the Bill as it was defeated by the Liberal majority in the Senate.

2.4.1 The First World War

Legally, when Britain was at war Canada was at war; in 1914 there was no question that most of Canada, including Quebec, supported a war waged by England, France and Russia against Germany and Austria. In October 1914, 33,000 Canadian troops sailed for overseas, many of them never to return, and other divisions followed. The Canadians were among the best Allied shock troops on the western front, in that hideous landscape of barbed wire, machine guns and mud, defensive techniques so effective that attacks of any kind, whether by Germans or Allies, resulted in staggering casualties. In Borden's view, the Canadian commitment to the war in men and material warranted a voice in the British conduct of the war. Information was indeed conveyed at the highest level; but consultation was another matter.

By 1917 the rate of Canadian casualties was already causing a crisis in Canada. Borden came back to Canada in May 1917 after a visit to Britain, convinced that the allied position was critical and that Canada would have to do more. Others at home were not so convinced. The Canadian army had enlisted French Canadians but generally the government had failed to enlist their sympathies. Some of this failure was undoubtedly attributable to the government itself. There was a dispute in Ontario over French-language schools and Henri Bourassa believed that domestic threats to French Canadian life at home ought to be eliminated before tackling enemies abroad.

Borden introduced conscription, but could not carry Laurier with him. The Liberal party split, some English-speaking Liberals joining Borden's government in a Unionist coalition. Essentially, Borden had to govern without French Canada. There was some opposition to conscription in Canada, not only in Quebec but also among farmers in Ontario, the west and in the Maritimes. Nevertheless, in the 1917 election, Borden and his colleagues took 153 seats, against 82 for the Liberals. This figure underestimates, however, the support of the Liberal party: Laurier and his Liberal remnant took 40% of the popular vote, 74% in Quebec and about 45% in the Maritime Provinces.

Borden insisted upon Canada's voice being heard in Imperial war policy and to a considerable degree carried this insistence right through to Canada's signing the Versailles Treaty in its own right. The first major step in the development of national sovereignty had thus been taken.

The war caused a good deal of inflation and economic maladjustment in Canada which was reflected in the postwar period by the Winnipeg General Strike of May 1919 and the great diversity of regional interests and political parties evident in the election of 1921. There were new men on the scene: Borden had retired in 1920 to be replaced by Arthur Meighen (1874-1960); Laurier had died in 1919 and was replaced by Mackenzie King (1874-1950) who became Prime Minister in 1921.

2.4.2 From prosperity to depression

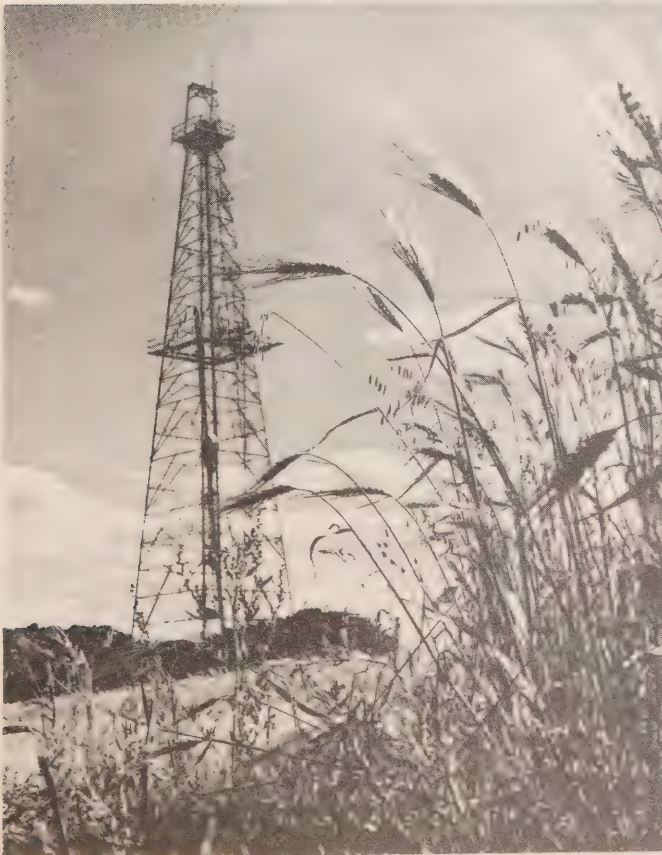
Canada of the 1920s was already a perceptible distance from the Canada of a decade before: automobiles were now commonplace and women had the vote. Prohibition which had achieved temporary success during the war was now gradually being eased by the establishment of provincial government-owned liquor stores. The stock market blazed its meteoric course across the later twenties and many Canadians were caught both in its rise and more disastrously in the crash that came in October 1929. Savings large and small disappeared and the enormous liquidation of investment went on into the early thirties. Britain went off the gold standard in 1931, the beginning of the end for the British pound's 70-year role as the world's international currency. The economic plight and the frustrations of the unemployed took its vengeance on Mackenzie King whose Liberal government fell in 1930.

R.B. Bennett (1870-1947) and his new Conservative government urged Canadians to tighten their belts. Government budgets were cut and deflation went steadily on. Dollars

became fewer and more valuable, gross national income dropped 45% in the three years between 1929 and 1932. Wheat and other primary exports became unsalable. Canada's dependence upon exports of wheat, lumber, pulp and paper made it especially vulnerable to deteriorating overseas markets. By 1933 one quarter of Canada's labour force was out of work; those who still had work clung precariously to their jobs, even if wages were cut.

The world price of wheat dropped to 60 cents a bushel from a 1929 high of \$1.60; this paid only slightly more than the cost of threshing and gave the farmer a net return of 25 cents a bushel. Even with that low price the farmer might have mortgaged his equipment and squeezed by for a year or two, if there had been good crops, but what devastated the west was not just the low price of wheat — they could not grow it. A series of terrible droughts in the summers of 1931 to 1934 ruined thousands of western farmers and turned their farms into desolations of wind and dust. Provincial governments everywhere struggled with relief programs but those in the west were overwhelmed. Municipalities were, however, the hardest hit.

What the national economy needed was massive doses of money but no federal government of those days dreamed of bold monetary and fiscal measures. They thought in terms of balanced budgets and careful housekeeping, much as individuals themselves do at such times. What was needed was the opposite. Keynesian economics was applied successfully by the Nazis in Germany who had hardly heard of Keynes, and it was also tried tentatively by President Franklin D. Roosevelt in the United States, with much backing and filling and amid a great deal of public criticism. Broadly speaking, it can be said that World War II cured the Great Depression in Canada by bringing about the application of what amounted to Keynesian techniques.



Oil and grain, the two products of the mid-west which enabled Canada to build a strong national economy from coast-to-coast. (*Imperial Oil Limited*)

In the meantime, some Canadians, disillusioned with the vagaries of the free enterprise system, were turning to other economic philosophies: The Co-operative Commonwealth Federation (CCF) was founded in 1932 and the new Social Credit party won the Alberta provincial election of 1935. R.B. Bennett, in desperation, launched his own version of Roosevelt's "New Deal" early in 1935. It did not save him or his party; they crashed to defeat in the October 1935 election, winning only 40 seats. "King or Chaos" had been the Liberal election slogan; the voters may not have wanted King that much but they wanted R.B. Bennett even less and the depression so unhappily associated with his government.

2.4.3 The Second World War

Canada's entry into World War II came at a time when the government and a considerable section of the Canadian population had been slowly weaned away from Europe and to a degree from Britain too. Mackenzie King's government had cultivated the development of Canada as a separate Dominion within the British Commonwealth and equal status with Britain had been officially recognized in the Statute of Westminster in 1931. Mackenzie King disliked European commitments of any kind and was prone to regard the foreign policies of Britain and France as old-fashioned balance-of-power diplomacy. He was confirmed in these views by an interview with Hitler in 1937 which convinced him of the sincerity of what he believed were Hitler's peaceful intentions. King also cultivated cordial relations with the United States through his friend Franklin D. Roosevelt.

The Canadian government declared war on Germany on September 10, 1939, nine days after Britain. At first there was only a limited commitment to overseas service but within nine months all was changed; by June 1940 the war was vastly different and profoundly disturbing. Between Hitler and the complete mastery of Europe stood only Britain, Canada, and the three other Commonwealth countries, Australia, New Zealand and South Africa. Canada's war effort now became total.

The Canadian Navy, with a more substantial base to begin from than in 1914, expanded rapidly, taking on virtually all convoy duty in the northwest Atlantic. Canada also administered the British Commonwealth Air Training Plan under which air crews from all Commonwealth countries were trained. Division after division of Canadian troops crossed to England. Their restlessness there — one can only train for so long — helped persuade the British and Canadian commands to test the German defences on the north coast of France and the disastrous Dieppe raid of August 1942 was the result. While the lessons of Dieppe proved invaluable for the great Allied invasion of June 1944, Canadians paid a terrible price for the experience.

Japan forced the United States into the war in December 1941 by the raid on Pearl Harbor and United States troops landed with the British in North Africa in the autumn of 1942. The Canadians joined in the assault on Sicily the following summer, crossed the Italian mainland and fought in the long and bitter Allied campaign against tenacious and skilful German resistance in Italy throughout 1943-44.

The campaigns of 1944 in Italy and in northwest Europe were fraught with heavy casualties for Canadian troops and by the early autumn of 1944 reinforcements were badly needed. In the October 1939 Quebec general election, when they sought the reinstatement of a Liberal government in that province, Ministers of the King government — most notably Ernest Lapointe (1876-1941) and P.J.A. Cardin (1879-1946) — had promised no conscription for overseas service. In 1942, by means of a plebiscite, the government sought release from this pledge. The result of the vote, however, was not clear: 64% of the voters were willing to release the government from their promise but in Quebec the vote was only 28% while in the rest of Canada it was 80%. There was already conscription for home defence, but should conscripted troops be sent overseas? The question nearly broke the King government in 1944. After a three-week crisis and the resignations (although for opposite reasons) of J.L. Ralston (1881-1948), Minister of Defence, and C.G. Power (1888-1970), Minister for Air, the Canadian government ordered the home defence troops overseas on November 23, 1944.

A general election was held in June 1945 shortly after the end of the European conflict. Mackenzie King was re-elected but with a narrow majority of only five seats. He retired in 1948 having held office longer than any previous Prime Minister in the British Commonwealth. He was succeeded by Louis St. Laurent (1882-1973).

Mr. St. Laurent presided over the entrance of Newfoundland into Canada on March 31,

1949, although the groundwork for this had been laid in 1947 and 1948. In 1949, the Canadian electorate, now including Newfoundland, gave him an overwhelming victory with a majority of nearly 70 seats.

2.4.4 Postwar development

The St. Laurent era covered the first years of remarkable postwar development in Canada. Gross national product rose from \$12 billion in 1946 to \$31 billion in 1956 and to \$61 billion in 1966. Much of this growth came from profound changes in the structure of the Canadian economy: the development of the service industries, the increased development of forest and mining products and their processing, and the expansion of the steel and aluminum industries. Oil discoveries, however, provided the real impetus to the economy. Before 1947 the old Turner Valley field accounted for less than 10% of Canadian consumption. Then in February 1947 Leduc No. 1, just south of Edmonton, came in, the first revelation of the enormous potential in both oil and natural gas. By 1956 oil led all other minerals in value and supplied 75% of Canada's needs. Much the same story is true in the development and exploitation of iron ore in Ungava, along the Quebec - Labrador boundary. The first shipment of ore in 1954 spurred the development of the St. Lawrence Seaway which was completed in 1959.

One of these developments was the natural gas pipeline planned to run 2,200 miles from Alberta to Montreal. The financing was complicated, involving substantial amounts of American capital and with Canada building the uneconomic sections through northern Ontario. The measure passed through Parliament but it was a stormy and disputed passage. The famous pipeline debate contributed heavily to the fall of the St. Laurent government in the 1957 election. The Progressive Conservative party, under the leadership of John G. Diefenbaker (b.1895), won the most seats in this election, although it was by no means a clear majority. Another election was held in 1958 and Mr. Diefenbaker secured the largest majority of any party in Canadian history with 208 seats to the Liberals' 49 and the CCF's 8. However, in the next election held in 1962 Mr. Diefenbaker was reduced to leading a minority government and in 1963 the Liberal party took over again, a minority government itself, but one which managed to stay in office.

Lester B. Pearson (1897-1972) became leader of the Liberal party on the retirement of Mr. St. Laurent in 1958, and was Prime Minister from 1963 to 1968. Mr. Pearson's career paralleled the development of the nation from a country concerned primarily with its own internal problems to one of international stature and importance. Canada's participation in the creation of the United Nations brought the attention of the world to the value of diplomacy as practised by a "middle" power. While that role has been modified by recent events it was at the time of considerable importance in world affairs.

The domestic economy also experienced radical changes during this period. In response to the demand of returning veterans for a better deal on demobilization and pressure from the general public not to allow a return to prewar economic conditions, the government embarked on social programs which were similar to those being introduced in Britain and other Commonwealth countries. The Unemployment Insurance Act was introduced in 1940, Family Allowances in 1944, Old Age Security in 1951, Unemployment Assistance in 1956, the Canada and Quebec Pension Plans in 1965, the Guaranteed Income Supplement and the Canada Assistance Plan in 1966.

After much debate a new Canadian flag was chosen and raised on Parliament Hill for the first time on February 15, 1965. Perhaps it can be said that the single maple leaf symbolizes a political entity built upon a diversity of regional, even local, loyalties. The Canadian federation is not only a political reality, but one might almost say an emotional one. Canada has survived as a federation because the binding political and emotional forces have been stronger than the forces favouring disintegration. Canadians are conscious of both their country and their province, but the weight given to the orders of jurisdiction varies greatly from province to province, and over time. The very survival of a federal state of Canada's size — 3.85 million sq miles, and the second largest country in the world — is a feat in itself. Canadians have committed large material resources and invested considerable emotional energy in efforts to preserve national unity against internal disruption, to establish national independence, and to maintain that independence in the face of a neighbour to the south of nearly Canada's area but with ten times its population and economic power.

Canada celebrated the one hundredth anniversary of Confederation in 1967 in a year-long birthday party which included events ranging from local efforts involving a few individuals to the supremely successful Expo 67 in Montreal. This exhibition showed Canadians and the world what could be achieved through the peaceful blending of cultures in one society.

Sources

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Chapter 3

The Constitution and the law

As the society of a country becomes more highly developed, the body of law governing its citizens becomes more complex. This chapter has been planned to explain, in a systematic manner, the law as it has evolved in Canada. The basis of written law, the Constitution, is dealt with in some detail, followed by a discussion of the distribution of powers between federal and provincial jurisdictions. Application of the law involves the Courts, the legal profession and the various agencies charged with enforcement. The ultimate concern of these agencies, the lawbreaker, and correctional institutions are studied in the concluding sections.

3.1 The Constitution

The Canadian federal state, which today comprises ten provinces and two northern territories, had its beginning over one hundred years ago in the enactment by the British Parliament on March 29, 1867 of the British North America Act, 1867. Fashioned largely out of the Seventy-two Resolutions drafted at Quebec (1864) by the Fathers of Confederation, the BNA Act, 1867 provided for the federal union of the three British North American provinces (Canada, New Brunswick and Nova Scotia) in one Dominion under the name of Canada.

Although the new nation that came into being on July 1, 1867 was a federation comprising four provinces (Ontario, Quebec, New Brunswick and Nova Scotia) Section 146 of the Act provided for admission into the Union of the Crown colonies of Prince Edward Island and Newfoundland on the Atlantic and the united (1866) island and mainland colony of British Columbia on the Pacific, and also of the vast expanse of Hudson's Bay Company territory in the northwest known as "Rupert's Land and the North-Western Territory". Following negotiation of an agreement on terms comprising the Company's surrender of its authority and territories to the Crown (which was to transfer them at once to Canada) and the retention of one twentieth of the land of the fertile belt (the southern territories) with designated blocks of land around its trading posts and a Canadian cash payment of £300,000, the new nation of Canada was ready to expand westward with considerable momentum across the continent to the Pacific.

The acquisition by Canada of Rupert's Land and the North-Western Territory permitted limited provincial establishment of the Red River settlement under the name of Manitoba in 1870; provided the federal government with public lands needed to help subsidize a transcontinental railway linking the Pacific with the Canadian east, thereby fulfilling the pledge to British Columbia to begin the Canadian Pacific Railway within two years and laid, through the provision of millions of acres of public lands, the land and economic bases for the federal government's adoption of a free-homestead policy for the Canadian prairies that, in conjunction with the completion of the Canadian Pacific Railway and the launching of other railway lines, brought wave after wave of settlers into the northwest in such numbers as to justify the creation of Saskatchewan and Alberta in 1905 out of the portion of the Northwest Territories south of the 60th parallel of north latitude. Although provision for their entry was included in the BNA Act, 1867, Prince Edward Island held back from the Union until 1873 and Newfoundland became Canada's tenth province on March 31, 1949 (see Table 3.1).

The Constitution of Canada, which had a corporate beginning in 1867, combines, in a set of rules determining the creation and operation of the machinery or institutions of government, the Cabinet system of responsible government (based on an inheritance from Britain) with a Canadian adaptation of federalism (as then practised in the United States for 80 years). A written document, the BNA Act of 1867, contains a substantial portion of Canada's Constitution and this Act, with its various amendments, is popularly held to be the Canadian Constitution. There is, however, another and perhaps more important part which appears, through the evolutionary processes of historical growth, in various guises including well-established usages and conventions found in the unwritten provisions of the Constitution.

Thus, the BNA Act is not a comprehensive constitutional document presenting an exhaustive statement of fundamental laws and rules by which Canada is governed. The Constitution of Canada in its broadest sense includes other British statutes (such as the Statute of Westminster, 1931) and Orders in Council (notably those admitting various provinces and

territories to the federation), Statutes of the Parliament of Canada relating to such matters as the succession to the Throne, the Royal Style and Titles, the Governor General, the Senate, the House of Commons, the creation of courts, the establishment of government departments, the franchise, elections, and also statutes of provincial legislatures relating to provincial constitutional institutions and government matters. Federal and provincial Orders in Council, legally authorized by their respective statutes, provide further constitutional material as do the decisions of the courts which interpret the BNA Act and all ordinary statutes and indeed possess the power to set aside any laws which they hold to be *ultra vires* or beyond the jurisdiction of the enacting legislative bodies, whether federal or provincial. Moreover, the Canadian Constitution comprises, in addition to the statutory law and its judicial interpretation, substantial sections of the common law, unwritten constitutional usages and conventions and principles of democratic government which were transplanted from Britain over two hundred years ago and since then have been thriving and evolving in the Canadian environment. For example, the Cabinet system of responsible government and its functioning through close identification of the executive and the legislative powers (that is, of the Cabinet and the House of Commons) is not mentioned in the BNA Act but derives from an unwritten convention of the Constitution.

Although the essential principles of Cabinet government are based on custom or constitutional usage, the federal structure of Canadian government rests on the explicit written provisions of the BNA Act. Apart from the creation of the federal union, the dominant feature of the Act and indeed of the Canadian federation was the distribution of powers between the central or federal government on the one hand and the component provincial governments on the other. In brief, the primary purpose was to grant to the Parliament of Canada legislative jurisdiction over all subjects of general or common interest, while giving to the provincial legislatures jurisdiction over all matters of local or particular interest.

Unlike the written constitutions of many nations, the BNA Act lacks comprehensive "bill of rights" clauses, although it does accord specific constitutional protection to the use of the English and French languages (clause 133) and special safeguards with respect to sectarian or denominational schools. Freedom of speech, freedom of assembly, freedom of religion, freedom of the press, trial by jury and similar liberties enjoyed by the individual citizen are not recorded in the BNA Act but rather depended on the statute law and the common law inheritance until these rights were confirmed by the passage of a Canadian Bill of Rights — An Act for the Recognition and Protection of Human Rights and Fundamental Freedoms (SC 1960, c.44), assented to August 10, 1960.

The right to use either the English or the French language in the House of Commons, the Senate or the federal courts is constitutionally guaranteed by Section 133 of the BNA Act. The use of the English and French languages in the administration of the Government of Canada is dealt with in the Official Languages Act (RSC 1970, c.O-2). That Act provides that government notices to the public, certain orders and regulations, and final decisions of federal courts are to be made or issued in both languages and that, in the National Capital Region and in federal bilingual districts, government services are to be available in both languages. The Commissioner of Official Languages for Canada is responsible for ensuring that the Act is complied with.

Amendment of the Constitution. No provision was made in the BNA Act of 1867 for amendment thereof by any legislative authority in Canada but both the Parliament of Canada and the provincial legislatures were given legislative jurisdiction with respect to some matters relating to government. Thus, for example, the Parliament of Canada was given jurisdiction with respect to the establishment of electoral districts and election laws and the privileges and immunities of members of the House of Commons and the Senate, and each provincial legislature was empowered to amend the constitution of the province except as regards the office of Lieutenant-Governor. Amendments to the BNA Act have been made on 14 occasions since 1867 by the British Parliament. By an amendment to the BNA Act passed in 1949, the authority of the Parliament of Canada to legislate with respect to constitutional matters was considerably enlarged and it may now amend the Constitution of Canada except as regards the legislative authority of the provinces, the rights and privileges of provincial legislatures or governments, schools, the use of the English or the French language, and the duration of the House of Commons other than in time of real or apprehended war, invasion or insurrection.

The search for a satisfactory amending procedure within Canada which satisfies the need

to safeguard basic provincial and minority rights and yet possesses sufficient flexibility to ensure that the Constitution can be altered to meet changing circumstances has been the subject of repeated consideration in the Parliament of Canada as well as in a series of formal federal-provincial conferences and meetings in 1927, 1935-36, 1950 and 1960-61. In 1964 the text of a draft Bill "to provide for the amendment in Canada of the Constitution of Canada", which embodied the amending procedure or formula recommended by the Conference of Attorneys General, was unanimously accepted by the Conference of the Prime Minister and the Premiers in October of that year. However, Quebec subsequently withdrew its approval of the formula and it was never adopted.

Between February 1968 and June 1971, eight federal-provincial conferences were held on the constitution. A committee of officials was established to provide assistance in the study of constitutional questions. The provincial governments with one exception and the federal government submitted proposals for a new constitution. The discussions culminated in the drafting of the Canadian Constitutional Charter 1971, which set out specific constitutional reforms including a revised amendment procedure. The Charter was considered at the Constitutional Conference in Victoria, BC, in June 1971 but as yet has not been accepted by all governments.

Treaty-making powers. The federal government has exclusive responsibility for the conduct of external affairs as a matter of national policy affecting all Canadians. The policy of the federal government in discharging this responsibility is to promote the interest of the entire country and of all Canadians of the various provinces within the over-all framework of a national policy.

In matters of specific concern to the provinces of Canada, it is the policy of the Canadian government, in a spirit of co-operative federalism, to do its utmost to assist the provinces in achieving the particular aspirations and goals that they wish to attain. The attitude of the federal government in this respect was illustrated by the "entente" signed by representatives of Quebec and France in the field of education in February 1965. Provincial and federal authorities co-operated actively in a procedure that enabled Quebec, within the framework of the Constitution and the national policy, to participate in international arrangements in a field of particular interest to that province.

Thus, under existing procedures, once it is determined that what a province wishes to achieve through agreements in the field of education or in other fields of provincial jurisdiction falls within the framework of Canadian foreign policy, the provinces may discuss detailed arrangements direct with the competent authorities of the country concerned. When a formal international agreement is to be concluded, however, the federal powers relating to the signature of treaties and the conduct of over-all foreign policy must necessarily come into operation.

3.2 Distribution of federal and provincial powers

The most important provisions of the BNA Act relate to the distribution of powers between the federal and provincial governments. Sections 91 and 92 are particularly important:

91. It shall be lawful for the Queen, by and with the Advice and Consent of the Senate and House of Commons, to make Laws for the Peace, Order, and good Government of Canada, in relation to all Matters not coming within the Classes of Subjects by this Act assigned exclusively to the Legislatures of the Provinces; and for greater Certainty, but not so as to restrict the Generality of the foregoing Terms of this Section, it is hereby declared that (notwithstanding anything in this Act) the exclusive Legislative Authority of the Parliament of Canada extends to all Matters coming within the Classes of Subjects next herein-after enumerated; that is to say:

1. The amendment from time to time of the Constitution of Canada, except as regards matters coming within the classes of subjects by this Act assigned exclusively to the Legislatures of the provinces, or as regards rights or privileges by this or any other Constitutional Act granted or secured to the Legislature or the Government of a province, or to any class of persons with respect to schools or as regards the use of the English or the French language or as regards the requirements that there shall be a session of the Parliament of Canada at least once each year, and that no House of Commons shall continue for more than five years from the day of the return of the Writs for choosing the House: Provided, however, that a House of Commons may in time of real or apprehended war, invasion or insurrection be continued by the Parliament of Canada if such continuation is not opposed by the votes of more than one third of the members of such House.

[Note: Added by the British North America Act (No. 2), 1949, 13 Geo. VI, c.81 (U.K.).]

1A. The Public Debt and Property.

[Note: Re-numbered 1A by the British North America Act (No. 2), 1949, 13 Geo. VI, c.81 (U.K.).]

2. The Regulation of Trade and Commerce.

2A. Unemployment insurance.

[Note: Added by the British North America Act, 1940, 3-4 Geo. VI, c.36 (U.K.).]

3. The raising of Money by any Mode or System of Taxation.

4. The borrowing of Money on the Public Credit.

5. Postal Service.

6. The Census and Statistics.

7. Militia, Military and Naval Service, and Defence.

8. The fixing of and providing for the Salaries and Allowances of Civil and other Officers of the Government of Canada.

9. Beacons, Buoys, Lighthouses, and Sable Island.

10. Navigation and Shipping.

11. Quarantine and the Establishment and Maintenance of Marine Hospitals.

12. Sea Coast and Inland Fisheries.

13. Ferries between a Province and any British or Foreign Country or between Two Provinces.

14. Currency and Coinage.

15. Banking, Incorporation of Banks, and the Issue of Paper Money.

16. Savings Banks.

17. Weights and Measures.

18. Bills of Exchange and Promissory Notes.

19. Interest.

20. Legal Tender.

21. Bankruptcy and Insolvency.

22. Patents of Invention and Discovery.

23. Copyrights.

24. Indians, and Lands reserved for the Indians.

25. Naturalization and Aliens.

26. Marriage and Divorce.

27. The Criminal Law, except the Constitution of Courts of Criminal Jurisdiction but including the Procedure in Criminal Matters.

28. The Establishment, Maintenance, and Management of Penitentiaries.

29. Such Classes of Subjects as are expressly excepted in the enumeration of the Classes of Subjects by this Act assigned exclusively to the Legislatures of the Provinces.

And any Matter coming within any of the Classes of Subjects enumerated in this Section shall not be deemed to come within the Class of Matters of a local or private Nature comprised in the Enumeration of the Classes of Subjects by this Act assigned exclusively to the Legislatures of the Provinces.

92. In each Province the Legislature may exclusively make Laws in relation to Matters coming within the Classes of Subjects next hereinafter enumerated; that is to say:

1. The Amendment from Time to Time, notwithstanding anything in this Act, of the Constitution of the Province, except as regards the Office of Lieutenant Governor.

2. Direct Taxation within the Province in order to the raising of a Revenue for Provincial Purposes.

3. The Borrowing of Money on the sole Credit of the Province.

4. The Establishment and Tenure of Provincial Offices and the Appointment and Payment of Provincial Officers.

5. The Management and Sale of the Public Lands belonging to the Province and of the Timber and Wood thereon.

6. The Establishment, Maintenance, and Management of Public and Reformatory Prisons in and for the Province.

7. The Establishment, Maintenance, and Management of Hospitals, Asylums, Charities, and Eleemosynary Institutions in and for the Province, other than Marine Hospitals.

8. Municipal Institutions in the Province.

9. Shop, Saloon, Tavern, Auctioneer, and other Licenses in order to the raising of a Revenue for Provincial, Local, or Municipal Purposes.

10. Local Works and Undertakings other than such as are of the following Classes:-

a. Lines of Steam or other Ships, Railways, Canals, Telegraphs, and other Works and Undertakings connecting the Province with any other or others of the Provinces, or extending beyond the Limits of the Province;

- b. Lines of Steam Ships between the Province and any British or Foreign Country;
- c. Such Works as, although wholly situate within the Province, are before or after their Execution declared by the Parliament of Canada to be for the general Advantage of Canada or for the Advantage of Two or more of the Provinces.
- 11. The Incorporation of Companies with Provincial Objects.
- 12. The Solemnization of Marriage in the Province.
- 13. Property and Civil Rights in the Province.
- 14. The Administration of Justice in the Province, including the Constitution, Maintenance, and Organization of Provincial Courts, both of Civil and of Criminal Jurisdiction, and including Procedure in Civil Matters in those Courts.
- 15. The Imposition of Punishment by Fine, Penalty, or Imprisonment for enforcing any Law of the Province made in relation to any Matter coming within any of the Classes of Subjects enumerated in this Section.
- 16. Generally all Matters of a merely local or private Nature in the Province.

Certain important subject matters are not included in Sections 91 and 92. For example, education, which (subject to guarantees provided the Catholic or Protestant minority) falls within the exclusive jurisdiction of the provincial legislatures, is dealt with in Section 93; and agriculture and immigration, over which both levels of government have jurisdiction, are dealt with in Section 95.

3.3 The legal system

3.3.1 Common law and Quebec civil law

With one exception, in all the provinces as well as in the two territories, the legal system derives from the common law system of England. The exception is Quebec where the system has been influenced by the legal developments of France. Quebec has its own Civil Code and Code of Civil Procedure. Over the years, both Canadian common law and Quebec civil law have developed unique characteristics. The body of law changes as society changes. In many of the provinces there are now Law Reform Commissions which have been charged with the function of inquiring into matters relating to the reform of the law having regard to both the statute law and the common law. In Quebec a general revision of the Civil Code is taking place under the auspices of the Civil Code Revision Office. At the federal level there is the Law Reform Commission of Canada whose purpose is "to study and keep under review on a continuing basis the statutes and other laws comprising the law of Canada with a view to making recommendations for their improvement, modernization and reform".

3.3.2 Criminal law

The criminal law of Canada has as its foundation the criminal common law of England built up through the ages and consisting first of customs and usages and later expanded by principles enunciated by generations of judges. There is no statutory declaration of the introduction of English criminal law into those parts of Canada that are now New Brunswick, Nova Scotia and Prince Edward Island. Its introduction there depends upon a principle of the common law itself by which English law was declared to be in force in uninhabited territory discovered and planted by British subjects, except in so far as local conditions made it inapplicable. The same may be said of Newfoundland although the colony dealt with the subject in a statute of 1837. In Quebec, its reception depends upon a Royal Proclamation of 1763 and the Quebec Act of 1774. In each of the other provinces and in the Yukon and Northwest Territories, the matter has been dealt with by statute.

The judicial systems of the provinces as they exist today are based upon the British North America Act of 1867. Section 91 of the Act provides that "The exclusive legislative authority of the Parliament of Canada extends to ... the criminal law, except the constitution of courts of criminal jurisdiction but including the procedure in criminal matters". By Section 92(14), the legislature of the province exclusively may make laws in relation to "the Administration of Justice in the Province, including the Constitution, Maintenance, and Organization of Provincial Courts, both of Civil and Criminal Jurisdiction and including Procedure in Civil Matters in those Courts". The Parliament of Canada may, however (Sect. 101), establish any additional courts for the better administration of the laws of Canada. It should be noted that the Statute of Westminster, 1931 effected important changes, particularly by abrogating the Colonial Laws Validity Act, 1865 (Br.) and confirming the right of a Dominion to make laws having extraterritorial operation.

At the time of Confederation each of the colonies affected had its own body of statutes relating to the criminal law. In 1869, in an endeavour to assimilate them into a uniform system applicable throughout Canada, Parliament passed a series of Acts, some of which dealt with offences of special kinds and others with procedure. Most notable of the latter was the Criminal Procedure Act, but other Acts provided for the speedy trial or summary trial of indictable offences, the powers and jurisdiction of justices of the peace in summary conviction matters and otherwise, and the procedure in respect of juvenile offenders.

Codification of the criminal law through a Criminal Code Bill founded on the English draft code of 1878, Stephen's *Digest of criminal law*, Burbridge's *Digest of the Canadian criminal law*, and the relevant Canadian statutes was brought about by the Minister of Justice, Sir John Thompson, in 1892. This Bill became the Criminal Code of Canada and came into force on July 1, 1893. It must be remembered, however, that the criminal code was not exhaustive of the criminal law. It was still necessary to refer to English law in certain matters of procedure and it was still possible to prosecute for offences at common law. Moreover, Parliament has declared offences against certain other Acts, e.g., the Narcotic Control Act, to be criminal offences.

An examination and study of the criminal code was authorized by Order in Council dated February 3, 1949, and the Commission which had been assigned the task of revising the code presented its report with a draft Bill in February 1952. After coming before successive sessions of Parliament it was finally enacted on June 15, 1954 and the new Criminal Code SC 1953-54, c.51 (now RSC 1970, c.C-34) came into effect on April 1, 1955. Since the new Code came into force a number of important amendments have been made. These include an amendment in 1956 providing that motions for leave to appeal to the Supreme Court of Canada in criminal cases should be heard by a quorum of at least five judges of that Court instead of by a single judge; amendments effected in 1959, providing a statutory extension of the definition of "obscenity" and making provision for seizure and condemnation of offending material without a charge necessarily being laid against any person; extensive amendments relating to the allowing of time for payment of fines; amendments dealing with offences committed in aircraft in flight over the high seas; and an amendment forbidding the publication in a newspaper or broadcast of a report that any admission or confession was tendered in evidence at a preliminary inquiry or a report of the nature of such admission or confession unless the accused has been discharged or, if the accused has been committed for trial, the trial has ended. (In 1969 a new amendment laid down that the accused may apply to the magistrate or justice holding a preliminary inquiry for an order forbidding publication of any of the evidence until the accused has been discharged or the trial itself ended.)

It is most important to note that in 1960 (SC 1960, c.44) Parliament enacted what is known as the Canadian Bill of Rights. Although the Act sets out further details, its general scope appears in Section 1, which reads as follows:

1. It is hereby recognized and declared that in Canada there have existed and shall continue to exist without discrimination by reason of race, national origin, colour, religion or sex, the following human rights and fundamental freedoms, namely, (a) the right of the individual to life, liberty, security of the person and enjoyment of property, and the right not to be deprived thereof except by due process of law; (b) the right of the individual to equality before the law and the protection of the law; (c) freedom of religion; (d) freedom of speech; (e) freedom of assembly and association; and (f) freedom of the press.

Although the Bill of Rights has been invoked on various occasions, the courts have not held it to affect the operation of the criminal code.

In 1961, the offence of murder was divided into capital and non-capital, the death penalty was abolished in relation to the offence of non-capital murder, and the term "criminal sexual psychopath" was dropped and the term "dangerous sexual offender" substituted; in 1965, provision was made for the right to appeal in habeas corpus proceedings.

The concept of "non-capital murder" was introduced into Canadian criminal law in 1961. At that time, capital murder was defined to include, for example, planned and deliberate murder, murder in the course of certain violent acts and murder of peace officers and prison officers. Life imprisonment was substituted for the death penalty in cases where the accused was convicted of non-capital murder.

In 1966 the House of Commons, in a free vote, rejected a Bill under which the death penalty for murder would have been completely abolished. The next year, in 1967, an Act was passed under which the definition of capital murder was restricted to the murder of police officers or prison officers. This Act was brought into force on December 29, 1967, and

continued in force for a period of five years from that day. The Act then expired and the broader definition of capital murder, introduced in 1961, again came into operation.

Some very comprehensive amendments to the criminal code are contained in the Criminal Law Amendment Act which was assented to on June 27, 1969 and, with certain exceptions, came into force on August 26, 1969. Among the changes were amendments relating to gaming and lotteries, "drinking and driving", homosexual acts and therapeutic abortion. It also affected the law relating to the publication of evidence, as mentioned above, and it affected the law relating to the issue of fitness to stand trial on the grounds of insanity.

In 1971 Parliament passed the Bail Reform Act which changed the criminal code by restricting police power of arrest for minor offences and requiring the police, as a general rule, to release persons arrested for minor or less serious offences as soon as possible. In addition, a justice is required to issue a summons unless the public interest requires a warrant of arrest. Save in very exceptional cases "cash bail" was abolished and, as a general rule, a person charged with an offence will be released simply on his written undertaking to attend court.

In 1972 the Criminal Law Amendment Act introduced a wide variety of reforms. Rules regarding jury duty were changed and men and women were made equally eligible and responsible to serve. The possibility of more flexible and appropriate law enforcement was enhanced by providing that individuals accused of certain kinds of crimes, such as obstructing the police, could be tried either by summary conviction or indictment. New offences were created with regard to hijacking and endangering the safety of aircraft, to soliciting for the purpose of prostitution by either male or female and to disturbing the peace of an apartment building. The offences of vagrancy and attempted suicide were abolished. Important changes were introduced with respect to sentencing — maximum sentences were increased for certain crimes connected with the administration of justice, whipping was abolished, and provision was made to permit a judge not to sentence an accused found guilty if the public interest would not be served by sentencing him. Provision was made whereby jail sentences under 90 days could be served at night and on weekends in order that the individual might continue to earn a living and support his family.

3.4 Courts and the judiciary

3.4.1 The federal judiciary

The Parliament of Canada is empowered by Section 101 of the British North America Act from time to time to provide for the constitution, maintenance and organization of a general Court of Appeal for Canada and for the establishment of any additional courts for the better administration of the laws of Canada. Under this provision, Parliament has established the Supreme Court of Canada, the Federal Court of Canada and certain miscellaneous courts.

Supreme Court of Canada. This Court, first established in 1875 and now governed by the Supreme Court Act (RSC 1970, c.S-19), consists of a chief justice, who is called the Chief Justice of Canada, and eight puisne judges. The chief justice and the puisne judges are appointed by the Governor in Council and hold office during good behaviour but are removable by the Governor General on address of the Senate and the House of Commons. They cease to hold office upon attaining the age of 75 years. The Court sits at Ottawa and exercises general appellate jurisdiction throughout Canada in civil and criminal cases. The Court is also required to consider and advise upon questions referred to it by the Governor in Council and it may also advise the Senate or the House of Commons on private Bills referred to the Court under any rules or orders of the Senate or of the House of Commons.

Appeals may be brought from any final judgement of the highest court of final resort in a province in any case where the amount or value of the matter in controversy exceeds the sum of \$10,000. An appeal may be brought from any other final judgement with leave of the highest court of final resort in the province; if such court refuses to grant leave, the Supreme Court of Canada may grant leave to appeal. The Supreme Court may grant leave to appeal from any judgement whether final or not. Appeals in respect of indictable offences are regulated by the criminal code. Appeals from federal courts are regulated by the statute establishing such courts. The judgement of the Supreme Court of Canada in all cases is final and conclusive.

Chief Justice and Judges of the Supreme Court of Canada as at December 31, 1972

Chief Justice of Canada, Rt. Hon. Mr. Joseph Honoré G  rald Fauteux (*Appointed March 23, 1970, first appointed a Judge of the Supreme Court, December 23, 1949*)

Hon. Mr. Justice Douglas Charles Abbott (*Appointed July 1, 1954*)
 Hon. Mr. Justice Ronald Martland (*Appointed January 15, 1958*)
 Hon. Mr. Justice Wilfred Judson (*Appointed February 5, 1958*)
 Hon. Mr. Justice Roland A. Ritchie (*Appointed May 5, 1959*)
 Hon. Mr. Justice Emmett M. Hall (*Appointed November 23, 1962*)
 Hon. Mr. Justice Wishart Flett Spence (*Appointed May 30, 1963*)
 Hon. Mr. Justice Louis-Philippe Pigeon (*Appointed October 6, 1967*)
 Hon. Mr. Justice Bora Laskin (*Appointed March 19, 1970*).

Federal Court of Canada. The Federal Court of Canada was constituted by Act of the Parliament of Canada under Section 101 of the British North America Act, 1867, which, after authorizing the creation of the Supreme Court of Canada, confers on the Parliament of Canada authority to constitute other courts for the better administration of the laws of Canada. The Federal Court of Canada is a court of law, equity and admiralty and it is a superior court of record having civil and criminal jurisdiction (Sect. 3 of the Act). It was established in 1875 as the Exchequer Court of Canada, which it replaced in December 1970 (SC 1970-71, c.1).

The Court has two divisions called the Federal Court — Appeal Division, and the Federal Court — Trial Division. The Appeal Division may be called the Court of Appeal or Federal Court of Appeal (Sect. 4 of the Act). The Court of Appeal consists of the Chief Justice of the Federal Court of Canada and three other judges. The Trial Division consists of the Associate Chief Justice of the Federal Court of Canada and seven other judges. Every judge is an ex officio member of the Division of which he is not a regular member (Sect. 5). In addition to the establishment of full-time judges, an added capacity to cope with the purely judicial work of the Court is provided by the authority to invite retired federally appointed judges to act as Deputy Judges of the Court (Sect. 10). This authority extends also to federally appointed judges who are still in office, but only with the consent of the appropriate Chief Justice or Attorney General. Former District Judges in Admiralty are also Deputy Judges of the Court and their services can be utilized on a limited basis (Sect. 60(3)).

Provision is also made in the Act for quasi-judicial officers called Prothonotaries (Sect. 12). Their duties are defined by the Rules and may be of a judicial nature (Sect. 46(1) (h)). In addition to being taxing-masters, they can, subject to supervision by the Court, deal with interlocutory work, and even take trials in minor matters as the Associate Chief Justice may find expedient in order to ensure the expeditious dispatch of the Court's business.

While all the full-time judges must reside in or near the National Capital Region (Sect. 7), each Division of the Court can sit any place in Canada and the place and time of the sittings must be arranged to suit the convenience of the litigants (Sects. 15 and 16). In addition, there is authority in the statute (Sect. 7(2)) for a rota of judges to provide for a continuity of judicial availability in any place where the volume of work, or other circumstances, makes such an arrangement expedient.

Judges of the Federal Court of Canada as at December 31, 1972

Chief Justice, Hon. Wilbur Roy Jockett (*Appointed June 1, 1971*)

Associate Chief Justice, Hon. Camilien Noël (*Appointed June 1, 1971*)

Court of Appeal Judges: Hon. Jacques Dumoulin (*Appointed June 1, 1971*), Hon. Arthur Louis Thurlow (*Appointed June 1, 1971*)

Trial Division Judges: Hon. Angus Alexander Cattanaach (*Appointed June 1, 1971*), Hon. Hugh Francis Gibson (*Appointed June 1, 1971*), Hon. Allison Arthur Mariotti Walsh (*Appointed June 1, 1971*), Hon. Roderick Kerr (*Appointed June 1, 1971*), Hon. Louis Pratte (*Appointed June 10, 1971*), Hon. Darrel Verner Heald (*Appointed July 9, 1971*), Hon. Frank U. Collier (*Appointed September 16, 1971*)

Deputy Judges of the Federal Court: Hon. Robert S. Furlong, Hon. James D. Higgins, Hon. Harold G. Puddeste, Hon. George Eric Tritchler, Hon. Dalton C. Wells.

Miscellaneous courts. The Railway Act, 1903 (RSC 1970, c.R-2) established the Board of Railway Commissioners for Canada as a court of record; by the Transport Act, 1938 (RSC 1970, c.T-14) the name was changed to the Board of Transport Commissioners for Canada, and by the National Transportation Act, 1967 (RSC 1970, c.N-17) to the *Canadian Transport Commission*. This court exercises jurisdiction with respect to transport matters under the Railway Act and the National Transportation Act, and with respect to telegraph and telephone matters under the Railway Act. The Governor in Council is given jurisdiction to vary or rescind any order of the Commission and an appeal lies from the Commission to the Supreme Court of Canada on a question of jurisdiction or of law.

By virtue of Section 91(21) of the British North America Act, 1867, Parliament has exclusive legislative jurisdiction in relation to bankruptcy and insolvency. By the Bankruptcy Act (RSC 1970, c.B-3) the superior courts of the provinces are constituted *bankruptcy courts*; original jurisdiction is conferred upon the trial courts and appellate jurisdiction is conferred upon the appeal courts of the provinces.

The Tax Review Board, created in 1949 as the Income Tax Appeal Board and later changed to the Tax Appeal Board, now operates under the Tax Review Board Act 1970 (SC 1970-71, c.11). The Board is a court of record and has jurisdiction to hear appeals by taxpayers against their assessment under the Income Tax Act and also appeals under the Estate Tax Act, the Old Age Security Act and certain sections of the Canada Pension Plan. An appeal lies from the Board to the Federal Court of Canada and a further appeal from that Court to the Supreme Court of Canada.

The Court Martial Appeal Court was established in 1959 by an amendment to the National Defence Act (RSC 1970, c.N-4). The judges of the Court are not fewer than four judges of the Federal Court of Canada designated by the Governor in Council and such additional judges of a superior court of criminal jurisdiction as are appointed by the Governor in Council. The Governor in Council designates one of the judges to be president of the Court. The Court hears appeals from courts martial respecting the legality of a finding of guilty on any charge and the legality of a sentence passed by a court martial. An appeal lies from the Court Martial Appeal Court to the Supreme Court of Canada on a question of law only.

The Immigration Appeal Board was established in 1967 by the Immigration Appeal Board Act (RSC 1970, c.I-3). The Board is a court of record, with broad discretionary powers to permit the temporary or permanent admission of individuals, notwithstanding contrary provisions of the Immigration Act. The establishing Act provides for the operation of the Board and in particular for the legal and administrative processes involved in appeals by individuals against deportation, detention and the refusal of admission of sponsored relatives ordered under the provisions of the Immigration Act or Regulations. An appeal lies to the Federal Court of Canada and to the Supreme Court of Canada on leave.

3.4.2 The provincial judiciary

Certain provisions of the British North America Act govern to some extent the provincial judiciary. Under Section 92(14) the legislature of each province exclusively may make laws in relation to the administration of justice in the province including the constitution, maintenance and organization of provincial courts of both civil and criminal jurisdiction. Section 96 provides that the Governor General shall appoint the judges of the superior, district and county courts in each province, except those of the courts of probate in Nova Scotia and New Brunswick.

3.4.3 The territorial judiciary

On April 1, 1971, amendments to the Yukon Act were promulgated into force simultaneously with certain ordinances of the Yukon Territory allowing the Yukon territorial government to assume the administration of justice. Ordinances coming into force that day provided for a Territorial (now Supreme) Court, a Magistrate's Court, justices of the peace and a Court of Appeal. The Supreme Court consists of a single judge of superior court rank and the Magistrate's Court. Both are located in Whitehorse, although from time to time Magistrate's Court sittings are held in other communities. There are 32 justices of the peace, appointed by the Commissioner, located at 15 points in the Territory. The Judge of the Supreme Court of the Northwest Territories is ex officio Judge in the Yukon Territory and vice versa. The Court of Appeal consists of the Chief Justices of British Columbia, the Justices of Appeal of British Columbia and the Judge of the Supreme Court of the Northwest Territories.

The court system in the Northwest Territories consists of a superior court called the Supreme Court of the Northwest Territories, presided over by one judge located in Yellowknife. The Court of Appeal of the Territories consists of the Justices of Appeal of Alberta and the Judges of the Yukon Territory and Northwest Territories Supreme Courts. There are also two full-time magistrates appointed by the Commissioner who have jurisdiction similar to provincial judges; a number of justices of the peace, also appointed by the Commissioner, serve in widely scattered settlements in the Territories.

3.4.4 Salaries, allowances and pensions of judges

Section 100 of the British North America Act provides that the "Salaries, Allowances, and Pensions of the Judges of the Superior, District, and County Courts (except the Courts of Probate in Nova Scotia and New Brunswick) and of the Admiralty Courts in Cases where the Judges thereof are for the Time being paid by Salary, shall be fixed and provided by the Parliament of Canada". These are provided under the Judges Act (RSC 1970, c.J-1 as amended by SC 1970-71, c.55).

The salary of the Chief Justice of Canada is \$47,000 per annum and those of the puisne judges of the Supreme Court of Canada, \$42,000. The salaries of the Chief Justice and the Associate Chief Justice of the Federal Court of Canada are \$39,000 per annum and of the other judges of the Federal Court, \$35,000. The salaries of deputy judges of the Federal Courts, who are judges of other superior courts and were formerly district judges in admiralty pursuant to the Admiralty Act, which was repealed (admiralty jurisdiction now being provided for by the Federal Court Act), are as follows: Ontario, \$1,500 and Newfoundland three judges at \$333.33 each.

All Chief Justices of provincial superior courts and the Associate Chief Justice of the Superior Court of Quebec receive annual salaries of \$39,000; the puisne judges of these courts and the judges of the two territorial courts receive \$35,000 per annum. Where judicial offices are created for supernumerary judges, the incumbents will receive \$35,000 per year. Supernumerary judges are those judges of a superior court of a province who have given up their regular judicial duties to hold themselves available to perform such special judicial duties as may be assigned to them from time to time by the Chief Justice or Associate Chief Justice of the Court of which they are a member. The chief judges of county and district courts receive salaries of \$27,000 per annum and the remaining judges and junior judges of all county and district courts, \$25,000 per annum.

Every judge who is in receipt of a salary under the Judges Act is paid an additional salary of \$3,000 per annum as compensation for any extra-judicial services that he may be called upon to perform by the Government of Canada or the government of a province, and for the incidental expenditures that the fit and proper execution of his office as judge may require. In the case of each judge of the Federal Court of Canada and of the territorial courts of the Yukon Territory and the Northwest Territories an additional allowance of \$2,000 per annum is paid as compensation for special incidental expenditures inherent in the exercise of his office as judge.

The Judges Act provides that a judge of a superior or county court who, for the purpose of performing any function or duty as such judge, attends at any place other than that at which or in the immediate vicinity of which he is by law obliged to reside is entitled to be paid, as a travelling allowance, his moving or transportation expenses and reasonable travelling and other expenses incurred by him in so attending. If a judge uses his personal automobile because of the lack of good public transportation facilities, he is paid a mileage allowance.

Judges' annuities are non-contributory and the statutory retirement age is 75 years except for judges of the Federal Court of Canada who cease to hold office at the age of 70 and judges of the county courts who are compulsorily retired at 70. Those judges of the county courts who held office at the time the retirement age was reduced to 70 years (1971) are not affected by the earlier retirement age but are allowed to serve as judges until they reach 75 years of age, the retirement age in force previously. The Governor in Council may grant an annuity to: a judge who has continued in judicial office for at least 15 years and has attained the age of 65, if he resigns his office; a judge who has continued in judicial office for at least 15 years, if he resigns his office and in the opinion of the Governor in Council the resignation is conducive to the better administration of justice or is in the national interest; a judge who has become afflicted with some permanent infirmity disabling him from the due execution of his office, if he resigns his office or if, by reason of such infirmity, he is removed from office; or a judge who ceases to hold office because he has attained the age of retirement, if he has held judicial office for at least ten years. The amount of the annuity may not exceed two thirds of the salary annexed to the office held at the time of resignation, removal or ceasing to hold office, as the case may be. An annuity granted to a judge commences on the day of his resignation, removal or ceasing to hold office and continues during his natural life.

The Governor in Council may grant to the widow of a judge who dies while in office an annuity not exceeding two ninths of the salary of the judge at the date of his death, to commence immediately after the death of the judge and to continue thenceforth during her

natural life. The Governor in Council may also grant to each of a maximum of four dependent children of a judge who dies while holding office or of a judge who is in receipt of an annuity under the Judges Act, an annuity equal to one fifth of the annuity payable to his widow, or if the judge dies without leaving a widow or such widow is dead, two fifths of the annuity that would have been payable to the judge's widow. Where a judge who was granted an annuity upon his retirement dies, the Governor in Council may grant to the widow an annuity not exceeding one third of the annuity that was granted to him. Two ninths of salary and one third of annuity are the same amount in dollars. An annuity granted to the widow of a judge ceases upon her remarriage. No annuity may be granted if the widow married the judge after he ceased to hold office.

3.5 The legal profession

The adjective "fused" is sometimes used to describe the legal profession in common law Canada since practising lawyers are both called as barristers and admitted as solicitors. Admission to practise is a provincial matter. Statutes setting out the powers and responsibilities of the provincial organizations are: [Alberta] The Legal Profession Act RSA 1970, c.203 as am.; [British Columbia] the Legal Professions Act RSBC 1960, c.214 as am.; [Manitoba] The Law Society Act RSM 1970, c.L-100; [New Brunswick] The Barristers' Society Act, 1931, SNB, 1931, c.50 as am.; [Newfoundland] The Law Society Act RSN 1952, c.115 as am.; [Nova Scotia] Barristers and Solicitors Act RSNS 1967, c.18 as am.; [Ontario] The Law Society Act RSO 1970, c.238; [Prince Edward Island] The Legal Profession Act RSPEI 1951, c.84 as am.; [Saskatchewan] The Legal Profession Act RSS 1965, c.301 as am.; [Northwest Territories] The Legal Profession Ordinance RONWT 1956, c.57 as am.; [Yukon] The Legal Profession Ordinance ROY 1958, c.64 as am. In Quebec the legal profession is divided into the separate branches of advocate and notary and their statutes are the Bar Act, SQ 1966/67, c.77 as am. and the Notarial Act, SQ 1968, c.70.

3.6 Legal aid

For many years the provision of legal services to persons unable to afford the fees normally charged by a lawyer was viewed as a responsibility to be assumed by individual lawyers on a voluntary basis as a form of charity. In more recent times most of the provincial governments have moved to establish publicly funded legal aid programs under which persons of limited means are able to obtain the services of a lawyer in a number of criminal and civil matters at either no cost or modest cost to themselves depending upon the client's financial circumstances. The lawyers who act for clients in matters covered by a provincial legal aid program are then paid by the government, usually at a reduced rate, on a fee for services basis or as a salary depending upon the type of legal aid program operated in the province. The provincial legal aid programs vary considerably in terms of formality, scope of coverage and method of providing the legal services. Some are established by legislative enactment while others exist and operate by way of informal agreements between the provincial government and the law society. Some programs provide for fairly comprehensive coverage in both criminal and civil matters while others at present encompass only criminal offences. Again, some plans operate on a fee for services basis whereas others rely partially or mainly on the services of state salaried lawyers. In some provinces a mixed system is in operation.

In 1971 the federal government entered the field and concluded an agreement with the government of the Northwest Territories for sharing the costs of providing legal aid in both criminal and civil matters for persons in the Territories financially unable to retain the services of a lawyer. This comprehensive legal aid program was implemented on August 17, 1971. In the Yukon Territory the legal aid program is at present a service operated by the territorial bar with the government paying the fees to lawyers who act for legal aid clients charged with criminal offences.

In August 1972, the federal government announced that it was prepared to enter agreements with the provincial governments under which federal funds would be paid to the provinces to assist them in developing or expanding their legal aid programs in matters related to criminal law. Under the agreements, which have now been concluded with the governments of British Columbia, Quebec, New Brunswick, and Nova Scotia, the federal government will contribute up to 50 cents per capita of the provincial population toward the costs of providing lawyers' services to eligible persons subject to criminal charges or proceedings under federal

laws. These federal-provincial agreements enable the provincial governments to determine the method or methods by which legal services will be provided to persons who qualify for assistance, but in cases where an individual is charged with a criminal offence carrying a penalty of capital punishment or life imprisonment that person is entitled to retain a lawyer of his or her own choice. The agreements also ensure that a person otherwise eligible to receive legal aid will not be disqualified as a recipient only because he or she is not a resident of the province in which the criminal proceedings take place.

3.7 Police forces

3.7.1 Organization of police forces

The police forces of Canada are organized in three groups: (1) the federal force, which is the Royal Canadian Mounted Police; (2) provincial police forces — Ontario and Quebec have their own provincial police forces but all other provinces engage the services of the Royal Canadian Mounted Police to perform parallel functions within their borders; and (3) municipal police forces — most urban centres of reasonable size maintain their own police forces or engage the services of the provincial police, under contract, to attend to police matters. In addition, the Canadian National Railways, the Canadian Pacific Railway Company and the National Harbours Board have their own police forces.

The Royal Canadian Mounted Police. The Royal Canadian Mounted Police is a civil force maintained by the federal government. It was established in 1873 as the North-West Mounted Police for service in what was then the North-West Territories and, in recognition of its services, was granted the use of the prefix "Royal" by King Edward VII in 1904. Its sphere of operations was expanded in 1918 to include all of Canada west of Thunder Bay and in 1920 it absorbed the Dominion Police, its headquarters was transferred from Regina to Ottawa and its title was changed to Royal Canadian Mounted Police.

The force now operates under authority of the Royal Canadian Mounted Police Act (RSC 1970, c.R-9). It is responsible to the Solicitor General of Canada and is controlled and managed by a Commissioner who holds the rank and status of a Deputy Minister and is empowered under the Act to appoint members to be peace officers in all provinces and territories of Canada.

The administration of justice within the provinces, including the enforcement of the Criminal Code of Canada, is part of the power and duty delegated to the provincial governments. All provinces, except Ontario and Quebec, have entered into contracts with the Royal Canadian Mounted Police to enforce criminal and provincial laws, under the direction of the respective Attorneys General. In addition, in these eight provinces, the force is under agreement to provide police services to 162 municipalities, thereby assuming the enforcement responsibility of municipal as well as criminal and provincial laws within these communities. The Yukon and Northwest Territories are policed exclusively by the Royal Canadian Mounted Police and therefore criminal offences, federal statutes and all ordinances of the territories fall within the ambit of force responsibility. The force maintains liaison officers in London, Paris, Hong Kong and Washington and represents Canada in the International Criminal Police Organization, which has its headquarters in Paris.

The 12 Operational Divisions, alphabetically designated, make up the strength of the force across Canada; they comprise 41 subdivisions which include 689 detachments. "Headquarters" Division, as well as the Office of the Commissioner, is located at Ottawa. Divisional headquarters, for the most part, are located in the provincial capitals, except for "C" Division which is in Montreal and "A" and "G" Divisions which are in Ottawa. "Air" Division, also with headquarters in Ottawa, supports the Operational Divisions by providing transportation and related services. "N" Division in Ottawa and "Depot" Division in Regina are training divisions.

A teletype system links the widespread divisional headquarters with the administrative centre at Ottawa and a network of fixed and mobile radio units operates within the provinces. The focal point of the criminal investigation work of the force is the Directorate of Laboratories and Identification; its services, together with those of divisional and subdivisional units and of five Crime Detection Laboratories, are available to police forces throughout Canada.

The Canadian Police Information Centre at RCMP Headquarters, a duplexed computer

system, is staffed and operated by the force. Law enforcement agencies throughout Canada have access via a series of remote terminals to information on stolen vehicles, licences, and wanted persons.

The RCMP operates the Canadian Police College at which force members and selected representatives of other Canadian and foreign police forces may study the latest advances in the fields of crime prevention and detection.

As at March 31, 1972 the force had a total strength of 13,726 including regular members, special constables, civilian members and Public Service employees.

Ontario Provincial Police. The Ontario Provincial Police, a Crown force, is the third largest deployed force on the North American continent, having a total authorized strength of more than 5,000 (1972) uniformed and civilian personnel.

The OPP is administered from general headquarters at Toronto by a Commissioner who has the rank and status of a Deputy Minister under the Ministry of the Solicitor General. Other senior executive officers include two Deputy Commissioners and six Assistant Commissioners. The force has two principal sides — Operations and Services — which are administered by the Deputy Commissioner Operations and the Deputy Commissioner Services, respectively. In turn, six divisions at the next level — Field, Traffic, Administration, Staff Services, Special Services, and Personnel — are administered by their respective Assistant Commissioners. Specialized branches under the Special Services Division include Auto Theft, Criminal Investigation, Anti-rackets, Security Intelligence, Criminal Intelligence, Anti-gambling and Liquor Laws Enforcement.

For policing and administration purposes, the province is divided geographically into 17 districts. In the field, there are 186 detachments controlled through 17 district headquarters located at Chatham, London, Burlington, Niagara Falls, Downsview, Mount Forest, Barrie, Peterborough, Belleville, Perth, Long Sault, North Bay, Sudbury, Sault Ste. Marie, South Porcupine, Thunder Bay and Kenora. Twelve municipalities are policed under special contract.

Under provisions of the Ontario Police Act, the force is responsible for: (1) enforcing federal and provincial statutes in those areas that are not required to maintain their own police department; (2) maintaining a traffic patrol on the more than 10,000 miles of King's Highways and 65,000 miles of secondary county and township roads; (3) enforcing the Liquor Licence Act and the Liquor Control Act for Ontario; (4) maintaining a Criminal Investigation Branch and other specialized branches to assist all other forces in the investigation of major crimes; and (5) assisting other forces by providing additional manpower in the event of emergencies.

Under the Staff Services Division, the Central Records and Communications Branch offers 24-hour seven-day-week service to all police departments in Ontario on such matters as criminal records, fingerprint records, missing and wanted persons, dry cleaning and laundry mark identification, and stolen and recovered property lists.

The OPP operates one of the largest frequency-modulation radio networks in the world, with 107 fixed radio stations and more than 1,300 radio-equipped mobile units including motorcycles, marine units and aircraft. It also operates the Ontario Provincial Police telecommunications network connecting all 17 districts as well as other police departments on a local, national and international basis. Extensions to routine police service are provided by canine, SCUBA and marine-bush rescue units strategically located throughout the province and available to other law-enforcement agencies upon request.

In addition to regular constable recruitment, the force has a cadet program permitting qualified young men to make a career in a long-established police force. Ranking officers, from inspector up to and including the Commissioner, receive the Queen's Commission in the same manner as members of the Canadian Armed Forces.

Quebec Police Force. The Quebec Police Force is responsible for order and public safety in the province, and for prevention and investigation of criminal offences and violation of any provincial law.

The province is divided into two almost equal areas: the Montreal Division and the Quebec Division. The Montreal Division has two subdivisions with headquarters in Hull and Montreal as well as the Estrie District composed of six detachments with headquarters in Sherbrooke; the Quebec Division has two subdivisions with headquarters in Chicoutimi and Quebec City as well as the Lower St. Lawrence District made up of three sections operating 20

detachments with headquarters in Rimouski. There are 106 detachments throughout the province — 58 in the Montreal Division and 48 in the Quebec Division. At the end of 1972, the force had 3,872 members including officers, non-commissioned officers and constables, and 794 office workers.

The QPF is under the command of a Director General, aided by four Assistant Directors General and a Controller of Personnel. Each division is headed by a Chief Inspector and each district and subdivision by a commissioned officer having the rank of Inspector.

Municipal police forces. Provincial legislation makes it mandatory for cities and towns to furnish adequate municipal policing for the maintenance of law and order in their communities. Also, all villages and townships or parts of townships having a population density and a real property assessment sufficient to warrant maintenance of a police force, and having been so designated by Order in Council, are responsible for adequate policing of their municipalities.

3.7.2 Uniform crime reporting

The present method of reporting police statistics (police administration, crime and traffic enforcement statistics), known as the Uniform Crime Reporting Program, was started on January 1, 1962, and was developed by the (then) Dominion Bureau of Statistics in co-operation with the Canadian Association of Chiefs of Police Committee on Uniform Crime Reporting.

As shown in Table 3.2, police personnel in Canada numbered 48,548 at the end of 1970, including 40,295 sworn-in policemen, 7,716 other full-time employees serving as clerks, technicians, artisans, commissionaires, guards, special constables, etc., and 537 cadets. The ratio of police personnel per 1,000 population was 2.3 and the ratio of police was 1.9. Provincial ratios for police personnel ranged from 1.3 to 4.0 per 1,000 persons and for police only from 1.2 to 3.2. In 12 selected metropolitan areas there were 17,124 police personnel including 14,728 police and 2,396 cadets and other full-time employees. Total municipal police personnel numbered 27,472 made up of 25,676 members of municipal forces, 1,750 Royal Canadian Mounted Police and 46 provincial police under municipal contracts.

Three policemen were killed by criminal action during 1970 and six policemen lost their lives accidentally while on duty. Police transport facilities at the end of the year included 8,385 automobiles, 848 motorcycles, 747 other motor vehicles, 431 boats, 22 aircraft, 234 horses and 85 service dogs.

Table 3.3 shows the number of crimes dealt with by the police in 1970, including offences under the criminal code, federal statutes, provincial statutes and municipal by-laws; offences cleared by charge and otherwise; and the number of adults and juveniles charged. Offences reported or known to police but proved unfounded are not shown in the Table but numbered 90,923, including 72,125 under criminal code classifications, 9,993 under federal statutes, 6,487 under provincial statutes and 2,318 under municipal by-laws, except traffic.

During 1970, police reported 90,728 offences committed against the person, including 430 murders, 11,025 rape and other sexual offences, and 78,979 offences of wounding and other assaults (not indecent); all offences against the person resulted in the charging of 32,771 persons, 2,152 of them juveniles. During the year there were 692,878 cases of robbery, theft and other offences against property, resulting in 126,834 persons charged, 37,470 of them juvenile males and 4,015 juvenile females; 67,271 cases of fraud, false pretences, forgery, etc.; 1,887 of prostitution; 1,838 gaming and betting; 6,440 offensive weapons; and 246,407 other criminal code offences. In addition to 36,494 various offences under federal statutes reported, there were 14,071 under the Narcotic Control Act and 4,718 under the controlled drug part of the Food and Drugs Act; these two classifications resulted in the charging of 13,462 persons.

Provincial and territorial fire marshals and commissioners reported 2,539 suspected or known incendiary offences, of which 235 were proved unfounded; 545 offences were reported cleared by charge; charges were laid against 541 adults and 166 juveniles.

The number of motor vehicles stolen was 62,584 (an estimated 736.4 per 100,000 vehicles registered); 56,324 or 90% of these vehicles were recovered. Police were asked to locate 21,758 missing adults and 47,373 missing juveniles; 20,471 adults and 46,630 juveniles were found. The number of drownings reported by police was 1,395.

During 1970, police departments in Canada reported 142,486 (1969, 110,734) criminal code traffic offences, resulting in 100,154 (70,208) persons charged, 2,540 (1,765) of them

females. Total charges reported under federal statutes numbered 3,980 (6,148), provincial statutes 1.8 million (2.0 million) and municipal by-laws 412,261 (387,397), excluding parking violations; the latter numbered 5.4 million (4.9 million), most of them reported by municipal police. There are certain traffic offences under provincial statutes which are almost identical to those under the criminal code. These are shown separately for 1970 in Table 3.4.

The number of traffic accidents reported was 544,088 (543,199), of which 4,483 (4,644) involved fatalities, 122,816 (116,935) resulted in injuries and 416,789 (421,620) involved property damage of over \$100. There were 5,660 (5,543) persons killed in traffic accidents, including 4,201 (4,098) drivers and passengers, 1,210 (1,225) pedestrians, 174 (187) cyclists and 75 (33) others; persons injured numbered 180,633 (173,845).

3.8 Crime and delinquency

3.8.1 Adult offenders and convictions

Offences may be classified under two headings, "indictable offences" and "offences punishable on summary conviction". Indictable offences are grouped in two main categories: offences that violate the criminal code and offences against federal statutes. These include the more serious crimes. Offences punishable on summary conviction — those not expressly made indictable — include offences against the criminal code, federal statutes, provincial statutes and municipal by-laws. Increases in the total number of summary conviction offences do not measure adequately the increase in the seriousness of crime. Many summary conviction offences amount to mere disturbances of the peace, minor upsets to public safety, health and comfort such as parking violations, intoxication, practising trades without licence. Nevertheless, summary conviction offences may include more serious charges such as assault and contribution to juvenile delinquency.

Adults convicted of indictable offences. Statistics are available for persons convicted of indictable offences. Thus it is possible to determine the population engaged in prohibited activities and to help in the treatment of anti-social behaviour in terms of subject-centred action. In the present counting system, although individuals may be charged with more than one offence, only one offence is tabulated for each person and is selected according to the following criteria: (1) if the person were tried on several charges, the offence is that for which proceedings were carried to the farthest stage — conviction and sentence; (2) if there were several convictions, the offence is that for which the heaviest punishment was awarded; (3) if the final result of proceedings on two or more charges were the same, the offence is the more serious one, as measured by the maximum penalty allowed by the law; (4) if a person were prosecuted for one offence and convicted of another — for example, charged with murder and convicted of manslaughter — the offence is the one for which the person was convicted.

In 1970 there were 51,866 adults charged with 86,597 indictable offences of whom 45,880 were found guilty of 75,334 offences (see Table 3.5). All data for 1969 and 1970 exclude returns for Quebec and Alberta. It should be noted that figures given in Tables 3.5-3.16 are based on information received through the provincial judicial systems and consequently cannot be compared with data reported by police under the Uniform Crime Reporting Program (Tables 3.2-3.4) which include these two provinces.

Table 3.6 classifies indictable offences by type of offence for 1969 and 1970. Class I covers offences against the person and in 1970, 5,560 males and 355 females were convicted in this category, mostly for assaults of various kinds. Classes II to IV deal with offences against property. Thefts predominate among the offences in these classes, and breaking and entering, extortion and robbery — serious crimes which involve acts of violence — are the next most numerous. Class V deals with offences relating to currency and Class VI with miscellaneous offences; among the latter, the most numerous convictions are for offences connected with gaming, betting and lotteries. In 1970, 1,972 men and 222 women were convicted under federal statutes of whom 1,556 men and 187 women were offenders under the Narcotic Control Act.

The number of female offenders convicted of indictable offences increased from 5,067 in 1969 to 6,997 in 1970 with Ontario accounting for 3,878 and British Columbia for 1,535 of the total. The ratio of female offenders convicted to total persons convicted increased from 13.3% in 1969 to 15.3% in 1970; the increases ranged from 4.2% in Prince Edward Island to 16.9% in British Columbia. Table 3.7 summarizes the most serious court sentences given for indictable offences, and Table 3.8 shows the method of trial and disposition of cases.

Two kinds of sentences — probation and commitment to an institution — maintain, for a certain period of time, a relationship between the person dealt with by the court and the legal institutions of a community. There are several types of institutions to which a person can be committed, such as penitentiaries, reformatories, jails and industrial farms. Theoretically, every institution has a specific purpose which is supposed to be taken into account when arriving at a legal decision. In practice, however, the availability of an institution in a given community is a factor in determining the decision rendered by the court.

Young adult offenders (16-24 years). Attention is focused on the needs of the young adult offenders, 16-24 years of age, who constitute a promising group for rehabilitation in modern reception and diagnostic centres equipped with educational, trade training and other formative disciplines. The young men and women in this age group accounted for 23.4% of the total population 16 years of age or over in 1968 but they formed over half of the criminal population committing indictable offences. The group includes some of the most daring offenders, who already may be experienced criminals, as well as first offenders likely to be turned from crime by further education and training. There were 23,118 young adult offenders in 1970, an increase of 19.1% over the previous year (see Tables 3.9 and 3.10).

Convictions for summary conviction offences. Offences punishable on summary conviction under the criminal code or under the provincial summary conviction Acts as the case may be, are triable by magistrates and justices of the peace. Data relating to these offences are based on convictions; no information is available on either the number of persons involved in these offences or the number of charges (see Table 3.11).

Appeals. Appeal is an important safeguard in Canada's legal system. The conviction or the sentence pronounced by a judge of a first instance court may be appealed on the grounds that the verdict was unreasonable, that there was a wrong decision on some question of law or that there was a miscarriage of justice. In 1970 there were 2,910 appeals in indictable cases disposed of by the courts, of which 410 were Crown appeals and 2,500 appeals of the accused. Of the Crown appeals, 65 were from acquittal and 345 from sentence. Appeals in summary conviction cases disposed of by the courts numbered 1,727 in 1970. Of these, 337 were appeals of the informant and 1,390 appeals of the accused. The informant appeals comprised 262 from acquittal and 75 from sentence, and appeals of the accused comprised 1,129 from conviction and 261 from sentence.

3.8.2 Juvenile delinquents

Juvenile delinquent, as defined in the Juvenile Delinquents Act, means any child who violates any provision of the criminal code or of any federal or provincial statute, or of any by-law or ordinance of any municipality, or who is guilty of sexual immorality or any similar form of vice, or who is liable by reason of any other act to be committed to an industrial school or juvenile reformatory under the provision of any federal or provincial statute. The commission by a child of any of these acts constitutes an offence known as a delinquency. The upper age limit of children brought before the juvenile courts in the provinces varies. The Act defines a child as meaning any boy or girl apparently or actually under the age of 16 years, or such other age as may be directed in any province. In Prince Edward Island, Nova Scotia, New Brunswick, Ontario and Saskatchewan under 16 is the official age; in Alberta under 16 for boys and under 18 for girls; in Newfoundland under 17; in Quebec, Manitoba and British Columbia under 18 years. Up to 1967, it was the practice of Statistics Canada to publish information about juvenile delinquents 16 years of age or over separate from that of juveniles under 16 years of age. From 1967 on, the figures include all those considered as juveniles by the respective provinces, regardless of the differing upper age limits.

Included in the statistics of juvenile delinquents (Tables 3.12-3.16) are cases (alleged as well as adjudged) which were brought before the courts and dealt with formally. A case was counted separately each time a child appeared before the court for a new delinquency or delinquencies. In instances where multiple delinquencies were dealt with at one court appearance, only one delinquency — the most serious — was selected for tabulation. Delinquencies reported as informal cases by the courts were not included nor were cases of children presenting conduct problems which were not brought to court or which were dealt with by the police, social agencies, schools or youth-serving agencies. Thus, community facilities for dealing with children's problems may have an influence on the number of cases

referred to court and, therefore, an effect on the statistics of juvenile delinquents.

Figures from 1969 in Tables 3.12-3.14 exclude those for Manitoba because of the initiation of a revised reporting program in that province. Statistics for Manitoba are given separately in Tables 3.15 and 3.16; a description of the change is given below. In 1971 Alberta also revised its juvenile court reporting program and Tables 3.12-3.14 exclude those for Alberta for that year. Table 3.16 includes statistics for Alberta for 1971.

Delinquents in Manitoba. Manitoba initiated a revised reporting program for delinquency in 1969. Basically, there are three groups of figures included in the new program: (1) those showing juveniles involved in judicial, non-judicial and no-contact procedures where the juvenile is counted only once in the year; (2) a count of all delinquencies recorded during the year; and (3) a group of all delinquencies against the Highway Traffic Act, including a duplicate count of juveniles who have more than one charge against them and regardless of the number of appearances at court. The information on informal or non-judicial and no-contact cases, under (1), was previously unreported.

In 1970, 5,573 juveniles were charged with delinquencies in Manitoba. Of this number 2,037 were found delinquent, 42 were freed with no action, 24 were dismissed, 926 had their cases adjourned, 26 were referred to adult court, and 2,518 were dealt with informally. The disposition of sentence for those found delinquent was: reprimand, 162; indefinite detention, 2; probation, 1,041; fine or restitution, 428; training school, 89; mental hospital, 1; suspended disposition, 265; and suspended driver's licence, 49.

Delinquents in Alberta. Alberta initiated a revised reporting program for delinquency in 1971. Basically, there are two groups of figures included in the new program: (1) those showing juveniles involved in delinquencies who are counted only once in the year; and (2) a count of all delinquencies recorded during the year.

3.9 Correctional institutions

Correctional institutions may be classified under three headings: (1) training schools — operated by the provinces or private organizations under provincial charter for juvenile offenders serving indefinite terms up to the legal age for children in the particular province; (2) provincial adult institutions; and (3) penitentiaries — operated for adult offenders by the federal government in which sentences of over two years are served.

3.9.1 Institutions and training schools

There is a limited amount of statistical information available with respect to correctional institutions (see Table 3.17). "In-custody" figures shown in Table 3.18 for penitentiaries refer only to those persons under sentence, but the figures for admissions include those received from courts as well as by transfer from other penitentiaries and by cancellation of paroles. Figures for releases include expiry of sentences, transfers between penitentiaries, releases on parole, deaths, pardons and releases on court order. In-custody figures for provincial and county institutions may include, in addition to those serving sentences, persons awaiting trial, on remand for sentence or psychiatric examination, awaiting appeal or deportation, any others not yet serving sentence and, for training school population, juvenile on placement.

Population figures in Tables 3.17 and 3.18 are for a given day of the year. These figures represent, in effect, a yearly census of correctional institutions and, as such, are not indicative of the daily average population count. For instance, if an abnormal number of commitments is made to a certain institution on or just prior to the end of the year, the result will be an unrepresentative population total for the institution in that year.

With regard to the fluctuations that might have occurred during the year between census days, the total population of correctional institutions has shown a general increase, however, totals for each type of institution have shown a tendency to level off. The marked decline in training school population is due to the closing of training schools in some provinces.

3.9.2 The Canadian Penitentiary Service

The Penitentiary Service operates under the Penitentiary Act (RSC 1970, c.P-6) and is under the jurisdiction of the Solicitor General of Canada. It is responsible for all federal penitentiary institutions and for the care and training of persons sentenced or committed thereto.

The Commissioner of Penitentiaries, under the direction of the Solicitor General, has

control and management of the Service and all matters connected therewith. In the year ended March 31, 1972 the federal penitentiary system consisted of 7 maximum security institutions, 9 medium security, 12 minimum security and 20 specialized institutions.

Maximum security institutions receive inmates sentenced by the courts to imprisonment for terms of from two years to life. These are located at Dorchester, NB; Ville de Laval and Ste. Anne des Plaines, Que.; Kingston and Millhaven, Ont.; Prince Albert, Sask.; and New Westminster, BC. The maximum security institutions at Ste. Anne des Plaines and Millhaven were constructed as part of a plan to gradually abandon the St. Vincent de Paul and Kingston penitentiaries.

Medium and minimum security institutions and correctional camps receive inmates transferred from the maximum security institutions on the basis of their suitability for special forms of training including vocational training. Medium security institutions are located at Springhill, NS, Ville de Laval, Que., Cowansville, Que., Collins Bay and Joyceville near Kingston, Ont., Campbellford, Ont., Stony Mountain, Man., and Drumheller, Alta. Minimum security institutions are located as follows: farm annexes at Dorchester, NB, Joyceville and Collins Bay, Ont., Stony Mountain, Man., Prince Albert, Sask.; minimum security institutions at Ville de Laval and Ste. Anne des Plaines, Que., Millhaven, Ont.; correctional camps at Agassiz, BC, Beaver Creek near Gravenhurst, and Landry Crossing near Petawawa, Ont.; and the William Head Institution at Metchosin, BC. The Penitentiary Service operates specialized institutions located as follows: the Correctional Development Centre at Ville de Laval, Que., for the treatment of special cases and the training of staff; the Regional Medical Centre at Ville de Laval, Que.; the Regional Reception Centre at Ste. Anne des Plaines, Que.; the Matsqui Institution for the treatment of narcotic addicts and the Regional Medical Centre at Abbotsford, BC; the Mountain Prison near Agassiz, BC, for older male recidivists; the Prison for Women, the Regional Medical Centre and the Regional Reception Centre at Kingston, Ont.; and the following community correctional centres: the Parr Town Centre at Saint John, NB; the Carleton Centre at Halifax, NS; the St. Hubert Centre at Montreal, Que.; the Portsmouth Centre at Kingston, Ont.; the Montgomery Centre at Toronto, Ont.; the Osborne Centre at Winnipeg, Man.; the Oskana Centre at Regina, Sask.; the Crieson Centre at Edmonton, Alta.; the Scarboro Centre at Calgary, Alta.; the West Georgia Centre and the Burrard Centre at Vancouver, BC.

Some inmates sentenced to penitentiary terms in Newfoundland are held in the provincially operated centres at St. John's under the provisions of Section 14 of the Penitentiary Act.

Headquarters of the Penitentiary Service is located at Ottawa and regional directorates are located in Vancouver, BC, Kingston, Ont., and Ville de Laval, Que., for the western, Ontario and Quebec areas, respectively. Three correctional staff colleges — at Kingston, Ville de Laval and New Westminster — are operated for the training of recruits, and for refresher courses for senior penitentiary officers. These staff colleges also provide excellent facilities for Service-wide conferences of institutional heads and other special groups of officers.

As at March 31, 1972, 36% of the inmates were in maximum security institutions, 51% in medium security and 13% in minimum security. New institutions have been carefully designed to provide facilities for the rehabilitation of their inmates. All afford space for both indoor and outdoor recreation. Some of the old institutions are being brought up to date to meet present-day needs and others are being phased out.

Every inmate enters the federal penal system through a regional reception centre or a receiving institution. The prime purpose of the reception centre is to allow a complete diagnosis of each individual inmate and, based upon the results of that diagnosis, to place the inmate in the institution within the system that would provide the best mix of training program and degree of security needed in each case. Facilities provide for admission in one of three categories: age 21 years and younger, age 22 years and older and first offenders, and, recidivists. Young or first offenders are segregated from the recidivists. Doctors, psychologists, and social workers examine them from the viewpoint of physical and mental health, abilities, training and need for schooling in order to launch them on a rehabilitation program. The program of the correctional services is directed primarily toward assisting the inmate in every possible way to regain his proper place in society. Better facilities to achieve this are constantly becoming available and the staff involved in the process is highly dedicated. Academic

opportunities are provided and inmates attend classes on either a full-time or part-time basis. Other students advance their education by correspondence courses offered at the elementary, secondary or university level. In 1971-72, approximately 3,500 inmates participated in adult education and vocational training programs offered by the Penitentiary Service, often with a view to acquiring a trade or profession. Expanded use was made of day parole and temporary absence in order to enable students to attend community education facilities. Fifty inmate-students were attending university, high school or community colleges at year-end. Religious programs are provided for all inmates and from 20% to 50% of them participate in worship services. Most chapels run multi-purpose chapel programs during the week where, besides religious instruction, other activities related to religious services are carried out. There is active inmate involvement in this section of the program which also includes suitable community participation.

Plans have been finalized to introduce interdisciplinary teams to be responsible for groups of inmates on a living unit basis in additional institutions besides the five originally selected as pilot institutions. The Living Unit Concept is an attempt to personalize the contacts between staff and inmates, to activate interpersonal relationships so that inmates, many of whom have regarded authority — whether inside or outside institutions — as antagonistic, can learn how to relate to it. This concept breaks down the inmate population into smaller groups with assigned staff, and facilitates the development of interpersonal relationships. The living unit training program will be conducted on a continuing basis as additional institutions are designated as "Living Unit Institutions". The training program for living unit officers is scheduled to keep up with the demand in order that training will occur immediately following the competitive and/or selection process. The program cannot function properly without establishing simultaneously adequate and indispensable security teams. The principles of the living unit cannot be implemented successfully without clearly dividing responsibilities between Security and Living Unit Officers. Therefore, each institution will have its own security force. The separation into two groups of correctional officers will help in providing better specialized training, more frequent and effective staff meetings and over-all improved security control.

Temporary absences continue to increase and during the 1971-72 fiscal year exceeded 35,000. Such leaves are granted for periods of up to three days by the institutional staff and up to 15 days by the Commissioner for humanitarian, rehabilitative and medical reasons. The failure rate of this program was a fraction of one percent.

A sound and healthy program of evening and weekend activities has been expanded over the past year. Eighteen citizen participation committees, comprising 150 citizens, operate in institutions. More than 1,500 citizen volunteers are involved in inmates' programs both institutional and community oriented. A number of those involved are ex-inmates who are responsible for organizing their own groups in consultation with institutional authorities. The programs include Alcoholics Anonymous, drama, singing, music instruction, guitar groups, public speaking lectures, films, sports and recreation as well as a diversified and varied assortment of discussion groups run by private agencies, professional, voluntary citizens and community groups.

An inmate in need of professional treatment or counselling receives such services from staff specialists serving an inmate population of about 7,800. There are 20 full-time physicians and 5 on contractual arrangements or part-time; 19 full-time dentists and 3 part-time; 10 psychiatrists on permanent strength, 15 on contract or part-time; 28 full-time psychologists, 10 part-time; and 125 classification officers and social workers.

3.9.3 The national parole system

Parole is a means by which an inmate in any correctional institution in Canada, if he gives definite indication of his intention to reform, can be released to finish his sentence in the community. The purpose of parole is the protection of society through the rehabilitation of the inmate. The true purpose of corrections should be the reformation of the offender and not merely vengeance or retribution. Nevertheless, the National Parole Board is as much concerned with the protection of society as with the reformation of the offender and supervision is as much a part of the parole system as is guidance. The Board selects those inmates who show sincere intention to reform and assists them in doing so by granting parole.

The inmate then is allowed to serve the remainder of his sentence in society, but under supervision, subject to certain restrictions and conditions. The Board is not a reviewing authority and is not concerned with the propriety of the conviction or the length of the sentence; this is the function of the court. Nor is parole granted for clemency or mercy.

The National Parole Board is composed of a chairman and eight other members. It has jurisdiction for parole over any adult inmate of any prison in Canada who was convicted of an offence against an Act of the Parliament of Canada and has authority to revoke or suspend any order made under the criminal code prohibiting any person from operating a motor vehicle. It has no jurisdiction over a child under the Juvenile Delinquents Act, or an inmate serving a sentence for a breach of a provincial statute, such as a liquor control Act.

Through the Parole Act, the National Parole Board is involved in the pardon granting process under the Royal Prerogative of Mercy, when asked to do so by the Solicitor General of Canada. This concerns free pardons, ordinary pardons, and remissions of fines, forfeitures, or penalties. Under the Criminal Records Act (RSC 1970, c.12, 1st Supp.) the Board also has specific responsibilities for investigations and recommendations concerning pardons of people who were convicted and subsequently rehabilitated. Under that Act a pardon may be granted two years after the end of a sentence for a summary offence or five years after a sentence for an indictable offence.

A person is sent to a federal institution if his sentence of imprisonment is two years or more, or to a provincial institution if his sentence is less than two years. All inmates can become eligible to apply for parole and need not obtain the services of a lawyer to do so. The date of parole review, to grant or refuse parole, for an inmate in a federal penitentiary is set within six months of his entry into the institution. If the sentence is under two years, the inmate is eligible for parole after one third of the sentence is served; if the sentence is two years or more, the inmate is eligible after one third of the sentence is served or after four years, whichever is less, although he must serve at least nine months of his sentence. The Board has the authority to grant an earlier release in exceptional circumstances where the case is deserving and where the best interests of the community and the inmate will be served. Where the sentence is for life, eligibility comes after seven years. If the inmate is serving a life sentence where the death sentence has been commuted, or a life sentence as a minimum punishment, parole cannot be granted until ten years of the sentence have been served; in both cases consent for parole must be given by the Governor in Council.

Unless an inmate advises the Board in writing that he does not want parole, the Board will review his case every two years, whether he applies or not, until he is either granted parole or his sentence is served. However, once eligible for parole, the inmate may apply at any time. An inmate in a provincial institution must either apply or have someone apply on his behalf. When an application is received an investigation lasting about four months is begun and the results presented to the Board for decision. In addition, a representative of the Board interviews the inmate.

The decision of the Board about any one inmate is based on reports it receives from the police, from the trial judge or magistrate and from various people at the institution who deal with him. Reports are also obtained, when available, from a psychologist or a psychiatrist and, if necessary, a community investigation is conducted to secure as much information as possible about his family and background, his work record and his position in the community. From these reports, an assessment is made to determine whether or not he has changed his attitude and is likely to lead a law-abiding life.

When all the reports are received and the community investigation completed, they are analyzed and presented to the Board for consideration. Parole for inmates in provincial institutions is granted or refused on the basis of these reports and investigations. For the inmate in a federal institution there is one more step before the Board makes its decision. He is interviewed by a panel of two or more Board members before his parole eligibility date to clarify or amplify his reasons for requesting parole and other aspects of his case that may have come to light through the reports and investigations.

A person on parole is under the care of a supervisor in one of the Board's 34 district offices, an after-care agency worker, or a probation officer. If he violates the conditions of his parole or commits a further offence or misbehaves in any manner, the Board may suspend or revoke his parole and return him to the institution to serve the part of his sentence that was

outstanding at the time his parole was granted. If a parolee commits an indictable offence, his parole is automatically forfeited and he is returned to the institution to serve the unexpired balance of his sentence plus any new term to which he is sentenced for the commission of the new offence. The district representative may also issue a Warrant of Suspension and have a parolee placed in custody if it is necessary to prevent a breach of any term or condition of the parole. These officers are thus able to exercise effective and adequate control over all parolees in their respective areas.

During the 14 years of its operation, up to December 1972, the Parole Board granted parole (of all types) to 44,471 inmates. During the same period, 6,874 parolees were returned to prison; 2,539 paroles were revoked for misbehaviour or the commission of a minor offence, and 4,335 paroles were forfeited for the commission of an indictable offence. In 1972 the Board granted 4,869 paroles of all types; 442 were revoked and 1,041 forfeited.

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- 3.8 Judicial Division. Institutional and Public Finance Statistics Branch, Statistics Canada.
- 3.9.1 Judicial Division. Institutional and Public Finance Statistics Branch, Statistics Canada.
- 3.9.2 Canadian Penitentiary Service.
- 3.9.3 National Parole Board.

Tables

.. not available	e estimate
... not appropriate or not applicable	p preliminary
— nil or zero	r revised
-- too small to be expressed	certain tables may not add due to rounding

3.1 Provinces and territories of Canada, dates of admission to Confederation, legislative processes by which admission was effected, present area and seat of government

Province, territory or district	Date of admission or creation	Legislative process	Present area sq miles	Seat of provincial or territorial government
Ontario ¹	July 1, 1867	Act of Imperial Parliament — The British North America Act, 1867 (Br. Stat. 1867, c. 3) and Imperial Order in Council, May 22, 1867	412,582	Toronto
Quebec ²	July 1, 1867		594,860	Quebec
Nova Scotia	July 1, 1867		21,425	Halifax
New Brunswick	July 1, 1867		28,354	Fredericton
Manitoba ³	July 15, 1870	Manitoba Act, 1870 (SC 1870, c. 3) and Imperial Order in Council, June 23, 1870	251,000	Winnipeg
British Columbia	July 20, 1871	Imperial Order in Council, May 16, 1871	366,255	Victoria
Prince Edward Island	July 1, 1873	Imperial Order in Council, June 26, 1873	2,184	Charlottetown
Saskatchewan ⁴	Sept. 1, 1905	Saskatchewan Act, 1905 (SC 1905, c. 42)	251,700	Regina
Alberta ⁴	Sept. 1, 1905	Alberta Act, 1905 (SC 1905, c. 3)	255,285	Edmonton
Newfoundland	Mar. 31, 1949	The British North America Act, 1949 (Br. Stat. 1949, c. 22)	156,185	St. John's
Northwest Territories ⁵	July 15, 1870	Act of Imperial Parliament — Rupert's Land Act, 1868 (Br. Stat. 1868, c. 105) and Imperial Order in Council, June 23, 1870	1,304,903	Yellowknife
Mackenzie ⁶	Jan. 1, 1920	Order in Council, Mar. 16, 1918	527,490	
Keewatin ⁶	Jan. 1, 1920		228,160	
Franklin ⁶	Jan. 1, 1920		549,253	
Yukon Territory ⁷	June 13, 1898	Yukon Territory Act, 1898 (SC 1898, c. 6)	207,076	Whitehorse
Canada			3,851,809	

¹ The area of Ontario was extended by the Ontario Boundaries Extension Act, 1912 (SC 1912, c. 40).

² Extended by Quebec Boundaries Extension Act, 1912 (SC 1912, c. 45) and diminished Mar. 1, 1927 in consequence of the Award of the Judicial Committee of the British Privy Council whereby approximately 112,000 sq miles of territory (formerly considered as part of Quebec) was assigned to Newfoundland.

³ Extended by the Extension of Boundaries Act of Manitoba, 1881 and the Manitoba Boundaries Extension Act, 1912 (SC 1912, c. 32).

⁴ Saskatchewan and Alberta created as provinces in 1905 from the area formerly comprised in the provisional districts of Assiniboia, Athabaska, Alberta and Saskatchewan established May 17, 1882 by minute of Canadian Privy Council concurred in by Dominion Parliament and Order in Council, Oct. 2, 1895.

⁵ By an Imperial Order in Council passed on June 23, 1870 pursuant to the Rupert's Land Act, 1868 (Br. Stat. 1868, c. 105), the former territories of the Hudson's Bay Company known as Rupert's Land and the North-Western Territory were transferred to Canada effective July 15, 1870. These territories were designated as the North-West Territories by the Act of SC 1869, c. 3, and as the Northwest Territories by RSC 1906, c. 62. By Imperial Order in Council of July 31, 1880 (effective Sept. 1, 1880), all British territories and possessions in North America not already included within Canada and all islands adjacent thereto (with the exception of the Colony of Newfoundland and its dependencies) were annexed to Canada and these additional territories were formally included in the North-West Territories by SC 1905, c. 27. The province of Manitoba was formed out of a portion of the territories by the Manitoba Act, 1870 (SC 1870, c. 3) and a further portion was added to Manitoba in 1881 by SC 1881, c. 14. The provinces of Alberta and Saskatchewan were formed out of portions of the territories in 1905 and in 1912 other portions were added to Manitoba, Ontario and Quebec.

⁶ By SC 1876, c. 21, a separate district to be known as the District of Keewatin was established and provision was made for the local government thereof. The Act was expressed to come into force by proclamation. It provided that portions of the District might be re-annexed to the North-West Territories by proclamation; in 1886 a portion of the District of Keewatin was re-annexed and in 1905 the entire Keewatin District was re-annexed. The Act of 1876 was never proclaimed. By Order in Council of May 8, 1882 the provisional districts of Assiniboia, Saskatchewan, Alberta and Athabaska were created for the convenience of settlers and for postal purposes. By Order in Council of Oct. 2, 1895 the further provisional districts of Ungava, Franklin, Mackenzie and Yukon were created. The boundaries of these provisional districts were re-defined by Order in Council of Dec. 18, 1897. Subsequently the Yukon Territory was formed, the provinces of Alberta and Saskatchewan were created and other portions of the territories were annexed to Quebec, Ontario and Manitoba. By Order in Council dated Mar. 16, 1918 (effective Jan. 1, 1920) the remaining portions of the Northwest Territories were divided into three provisional districts known as Mackenzie, Keewatin and Franklin.

⁷ The provisional district of Yukon established in 1895 was created a judicial district of the North-West Territories by proclamation issued pursuant to Sect. 51 of the North-West Territories Act (RSC 1886, c. 50) on Aug. 16, 1897 and, by the Yukon Territory Act (SC 1898, c. 6), was declared to be a separate territory.

3.2 Police personnel, actual strength, 1969 and 1970

Force	1969				1970			
	Police	Cadets	Other full-time employees	Total	Police	Cadets	Other full-time employees	Total
Royal Canadian Mounted Police	9,201	—	2,623	11,824	9,498	—	3,106	12,604
Ontario Provincial Police	3,573	26	880	4,479	3,755	34	936	4,725
Quebec Police Force	3,065	33	743	3,841	3,354	50	796	4,200
Municipal Police (excl. RCMP and OPP contracts)	21,505	429	2,628	24,562	22,437	453	2,786	25,676
Canadian National Railways Police	535	—	28	563	532	—	26	558
Canadian Pacific Railway Company Police	487	—	21	508	475	—	22	497
National Harbours Board Police	223	—	34	257	244	—	44	288
Total	38,589	488	6,957	46,034	40,295	537	7,716	48,548

3.3 Crime statistics, by type of offence, 1969 and 1970 (based on Uniform Crime Reporting Program)

Year and offence	Actual offences ¹	Offences cleared		Persons charged			
		By charge	Other-wise	Adults		Juveniles	
				Male	Female	Male	Female
1969							
Criminal code	992,661	221,563	137,961	159,497	17,564	46,140	5,056
Murder, capital and non-capital	342	249	31	218	42	16	1
Attempted murder	216	169	14	159	19	7	—
Manslaughter	44	38	1	35	5	3	—
Rape	1,019	506	170	726	2	32	—
Other sexual offences	9,717	3,444	1,624	3,020	23	350	27
Wounding	1,641	982	360	557	78	317	51
Assaults (not indecent)	72,077	24,444	33,206	22,183	1,308	1,123	183
Robbery	10,028	2,585	580	2,885	153	645	41
Breaking and entering	161,677	28,109	10,578	17,968	409	14,440	466
Theft, motor vehicle	59,531	11,292	3,503	7,940	180	5,553	106
Theft over \$50	119,742	12,605	6,960	9,509	1,059	3,451	256
Theft \$50 or under	246,212	37,878	29,567	20,184	6,195	11,560	2,423
Having stolen goods	10,354	9,246	795	5,821	378	1,550	141
Fraud	57,788	27,200	6,976	12,336	1,767	416	105
Prostitution	2,136	2,021	18	595	1,473	4	23
Gaming and betting	1,787	1,563	57	2,926	123	18	4
Offensive weapons	5,561	4,170	731	3,602	149	351	10
Other criminal code ¹	232,789	54,972	42,790	48,833	4,201	6,304	1,219
Federal statutes ²	47,070	34,936	7,567	28,370	1,777	885	665
Narcotic Control Act	8,179	4,411	683	4,032	591	529	118
Controlled drugs under the Food and Drugs Act	2,341	907	323	732	69	112	16
Provincial statutes ¹	346,541	261,427	73,843	238,711	16,271	4,183	1,830
Municipal by-laws ¹	71,839	46,831	14,930	39,654	5,758	1,807	138
1970							
Criminal code	1,107,449	243,207	154,045	175,050	21,383	46,475	5,681
Murder, capital and non-capital	430	276	82	265	31	16	2
Attempted murder	260	204	9	193	22	10	—
Manslaughter	34	34	—	33	2	2	—
Rape	1,079	516	197	634	3	76	2
Other sexual offences	9,946	3,567	1,671	3,134	28	344	22
Wounding	1,641	921	411	598	100	203	47
Assaults (not indecent)	77,338	26,689	35,914	24,031	1,545	1,259	168
Robbery	11,630	3,123	630	3,399	206	774	64
Breaking and entering	177,712	29,470	11,442	19,872	545	13,855	505
Theft, motor vehicle	62,805	11,624	3,590	8,381	194	5,251	127
Theft over \$50	150,010	14,938	9,022	11,498	1,315	3,973	373
Theft \$50 or under	278,765	45,185	34,119	24,273	8,414	11,982	2,788
Having stolen goods	11,956	10,634	852	6,755	497	1,635	158
Fraud	67,271	31,020	7,633	13,952	2,197	488	131
Prostitution	1,887	1,772	13	452	1,427	1	13
Gaming and betting	1,838	1,623	66	2,837	198	7	—
Offensive weapons	6,440	4,883	852	4,169	215	384	18
Other criminal code ¹	246,407	56,728	47,542	50,574	4,444	6,215	1,262
Federal statutes ²	36,494	24,929	8,104	19,289	1,060	674	434
Narcotic Control Act	14,071	9,172	1,158	8,596	1,226	680	133
Controlled drugs under the Food and Drugs Act	4,718	2,540	522	2,277	293	222	35
Provincial statutes ¹	335,788	242,292	81,035	219,954	15,501	4,787	2,378
Municipal by-laws ¹	73,086	45,715	17,586	38,268	5,391	1,341	134

¹ Except traffic.² Except traffic, Narcotic Control Act and Food and Drugs Act.

3.4 Traffic enforcement statistics, by type of offence, 1970 (based on Uniform Crime Reporting Program)

Offence	Actual offences	Offences cleared		Persons charged	
		By charge	Otherwise	Male	Female
Criminal code	142,486	102,486	7,823	97,614	2,540
Criminal negligence					
Causing death	178	177	1	172	6
Causing bodily harm	78	71	1	69	3
Operating motor vehicle	387	374	8	353	8
Failing to stop or remain at scene of accident	46,483	8,875	6,993	7,675	413
Dangerous driving	5,249	4,613	196	4,478	76
Driving while intoxicated	4,083	4,030	45	3,637	94
Driving while impaired	76,614	75,076	529	72,541	1,822
Driving while disqualified	9,414	9,270	50	8,689	118
Federal statutes (except parking)	..	..	..	..	3,980
Provincial statutes (except parking)	..	..	..	..	1,822,507
Municipal by-laws (except parking)	..	..	..	..	412,261
Provincial statutes ¹	66,044	50,142	5,930	46,157	3,262
Failing to stop or remain at scene of accident	16,907	5,898	1,972	5,110	397
Dangerous driving	47,713	42,897	3,904	39,711	2,852
Driving while disqualified	1,424	1,347	54	1,336	13

¹ Provincial traffic offences almost identical to those under the criminal code.

3.5 Persons charged and persons convicted of indictable offences, with ratio per 100,000 population 16 years of age or over, by province, 1969 and 1970

Province or territory	Persons charged		Persons convicted				Persons convicted per 100,000 population 16 years of age or over	
	1969	1970	1969	%	1970	%	1969	1970
	No.	No.	No.	%	No.	%	No.	No.
Newfoundland	997	1,082	978	98.1	1,047	96.8	321	337
Prince Edward Island	160	79	152	95.0	72	91.1	213	100
Nova Scotia	1,990	2,407	1,796	90.3	2,211	91.9	356	432
New Brunswick	1,929	2,238	1,845	95.6	2,136	95.4	460	527
Ontario	23,594	27,047	20,521	87.0	23,734	87.8	404	452
Manitoba	2,455	4,309	2,248	91.2	3,680	85.4	355	548
Saskatchewan	2,928	3,855	2,774	94.7	3,623	94.0	437	575
British Columbia	8,891	10,527	7,461	83.9	9,067	86.1	522	609
Yukon Territory and Northwest Territories	248	322	242	97.6	310	96.3	913	1,119
Canada ¹	43,192	51,866	38,017	88.0	45,880	88.5	397	490

¹ Excludes Quebec and Alberta.

3.6 Persons charged and convicted of indictable offences, by class of offence, 1969 and 1970

Class of offence	1969			1970		
	Persons charged	Persons convicted		Persons charged	Persons convicted	
		Male	Female		Male	Female
Criminal code						
Class I. Offences against the person	6,408	4,929	267	7,356	5,560	355
Class II. Offences against property with violence	6,999	6,224	124	7,983	7,069	172
Class III. Offences against property without violence	21,772	15,737	3,999	27,580	19,297	5,704
Class IV. Malicious offences against property	1,378	1,053	56	1,394	1,119	90
Class V. Forgery and other offences relating to currency	1,078	855	151	1,214	942	190
Class VI. Other offences	2,933	2,263	217	3,685	2,924	264
Total	40,568	31,061	4,814	49,212	36,911	6,775
Federal statutes	2,624	1,889	253	2,654	1,972	222
Total ¹	43,192	32,950	5,067	51,866	38,883	6,997

¹ Excludes Quebec and Alberta.

3.7 First court sentences given for indictable offences, by province, 1969 and 1970

Year and sentence	Nfld.	PEI	NS	NB	Ont.	Man.	Sask.	BC	YT and NWT	Canada ¹
1969										
Option of fine	337	70	667	525	6,286	392	775	1,701	69	10,822
Jail										
Under one year	261	31	341	511	3,903	652	842	2,775	89	9,405
One year or over	42	1	13	113	478	175	145	529	15	1,511
Reformatory and training school	—	—	3	6	1,911	—	—	—	—	1,920
Penitentiary										
Under two years	1	—	5	7	89	2	13	12	—	129
Two years and under five	29	15	173	116	802	173	80	343	4	1,735
Five years and under ten	—	—	16	11	126	18	9	74	1	255
Ten years and under fourteen	—	—	5	1	49	3	—	9	—	67
Fourteen years or over	1	—	1	—	21	3	4	5	—	35
Life	—	—	3	—	10	3	1	9	—	26
Preventive	—	—	—	—	—	—	—	6	—	6
Death	—	—	—	—	—	—	—	—	—	—
Suspended sentence without probation	113	16	70	165	1,400	600	457	1,066	3	3,890
Suspended sentence with probation	194	19	499	390	5,446	227	448	932	61	8,216
Total	978	152	1,796	1,845	20,521	2,248	2,774	7,461	242	38,017
1970										
Option of fine	390	30	834	709	8,022	803	1,116	2,499	84	14,487
Jail										
Under one year	236	21	456	564	4,329	904	938	2,835	107	10,390
One year or over	40	3	9	95	529	272	225	598	18	1,789
Reformatory and training school	—	—	5	3	2,233	—	—	—	—	2,241
Penitentiary										
Under two years	—	—	3	21	44	4	7	4	1	84
Two years and under five	20	8	210	117	717	212	100	281	3	1,668
Five years and under ten	—	—	10	11	147	32	11	57	—	268
Ten years and under fourteen	—	—	1	—	22	1	3	14	—	41

3.7 First court sentences given for indictable offences, by province, 1969 and 1970 (concluded)

Year and sentence	Nfld.	PEI	NS	NB	Ont.	Man.	Sask.	BC	YT and NWT	Canada ¹
Penitentiary (concluded)										
Fourteen years or over	—	—	—	—	9	1	1	4	—	15
Life	—	—	2	—	16	8	4	9	1	40
Preventive	—	—	1	—	1	1	1	1	—	5
Death	—	—	—	—	1	2	—	—	—	3
Suspended sentence without probation	47	3	30	182	1,478	948	407	462	2	3,559
Suspended sentence with probation	314	7	650	434	6,186	492	810	2,303	94	11,290
Total	1,047	72	2,211	2,136	23,734	3,680	3,623	9,067	310	45,880

¹ Excludes Quebec and Alberta.

3.8 Method of trial of persons charged with indictable offences, showing disposition of cases, by province, 1969 and 1970

Year and method of trial	Nfld.	PEI	NS	NB	Ont.	Man.	Sask.	BC	YT and NWT	Canada ¹
1969										
By judge and jury										
Convicted	7	1	34	8	435	37	68	188	5	783
Acquitted	6	1	14	—	207	7	10	61	—	306
Detained because of insanity	1	—	1	—	15	—	3	2	—	22
Disagreement of jury	—	1	—	—	4	—	—	4	—	9
Stay of proceedings	2	—	—	1	10	—	6	13	—	32
No bill	—	—	1	—	40	—	—	—	—	41
By a judge without jury										
Convicted	5	16	89	14	1,143	110	155	280	10	1,822
Acquitted	2	3	27	—	332	27	41	108	—	540
Detained because of insanity	—	—	1	—	1	—	—	—	—	2
Stay of proceedings	—	—	—	2	3	6	1	24	—	36
By a magistrate with consent										
Convicted	553	71	821	999	10,759	1,179	1,235	3,853	120	19,590
Acquitted	6	3	65	51	1,324	28	30	449	4	1,960
Detained because of insanity	—	—	—	2	2	—	—	2	—	6
Stay of proceedings	—	—	1	—	3	73	6	345	—	428
By a magistrate, absolute jurisdiction										
Convicted	413	64	852	824	8,184	922	1,316	3,140	107	15,822
Acquitted	2	—	84	28	1,131	18	57	316	2	1,638
Detained because of insanity	—	—	—	—	1	—	—	—	—	1
Stay of proceedings	—	—	—	—	—	48	—	106	—	154
Total, persons charged	997	160	1,990	1,929	23,594	2,455	2,928	8,891	248	43,192
Total, persons convicted	978	152	1,796	1,845	20,521	2,248	2,774	7,461	242	38,017
1970										
By judge and jury										
Convicted	4	—	17	—	480	43	52	110	9	715
Acquitted	1	2	4	—	200	10	14	83	2	316
Detained because of insanity	1	—	—	—	26	1	2	5	—	35
Disagreement of jury	—	—	—	—	8	—	—	6	—	14
Stay of proceedings	—	—	—	—	6	4	12	12	—	34
No bill	2	1	1	—	53	—	—	—	—	57
By a judge without jury										
Convicted	1	8	110	—	748	56	146	160	19	1,248
Acquitted	—	3	33	—	256	10	58	57	—	417
Detained because of insanity	—	—	—	—	3	—	1	1	—	5
Stay of proceedings	—	—	—	—	2	2	7	21	—	32
By a magistrate with consent										
Convicted	606	31	1,016	1,088	12,217	2,017	1,779	4,666	164	23,584
Acquitted	12	1	68	54	1,425	98	71	518	9	2,256
Detained because of insanity	1	—	1	—	—	—	—	5	—	7
Stay of proceedings	—	—	—	—	2	264	2	291	—	559
By a magistrate, absolute jurisdiction										
Convicted	436	33	1,068	1,048	10,289	1,564	1,646	4,131	118	20,333
Acquitted	18	—	88	48	1,329	67	64	331	1	1,946
Detained because of insanity	—	—	1	—	2	—	—	4	—	7
Stay of proceedings	—	—	—	—	1	173	1	126	—	301
Total, persons charged	1,082	79	2,407	2,238	27,047	4,309	3,855	10,527	322	51,866
Total, persons convicted	1,047	72	2,211	2,136	23,734	3,680	3,623	9,067	310	45,880

¹ Excludes Quebec and Alberta.

3.9 Young adult offenders, by age group, sex and province, 1969 and 1970

Year, age group and sex		Nfld.	PEI	NS	NB	Ont.	Man.	Sask.	BC	YT and NWT	Canada ¹
1969											
16-17 years	M	82	21	313	329	2,939	—	398	8	3	4,093
	F	8	2	25	20	267	—	56	—	—	378
18-19 "	M	206	29	280	322	2,645	390	425	1,285	7	5,589
	F	13	1	24	20	278	56	50	168	2	612
20-24 "	M	259	43	464	414	3,771	604	482	1,747	31	7,815
	F	12	2	36	22	466	71	55	251	2	917
Total		580	98	1,142	1,127	10,366	1,121	1,466	3,459	45	19,404
1970											
16-17 years	M	82	11	429	363	3,248	2	498	29	1	4,663
	F	14	1	66	45	442	—	73	2	1	644
18-19 "	M	200	17	376	292	2,875	660	570	1,558	6	6,554
	F	9	—	36	30	369	64	96	249	1	854
20-24 "	M	275	22	504	429	4,104	967	606	2,263	17	9,187
	F	28	—	62	27	572	96	70	361	—	1,216
Total		608	51	1,473	1,186	11,610	1,789	1,913	4,462	26	23,118

¹ Excludes Quebec and Alberta.

3.10 Young adult offenders convicted of indictable offences, by class of offence and sex, 1969 and 1970

Class of offence	1969		1970	
	Male	Female	Male	Female
Criminal code				
Class I. Offences against the person	2,097	88	2,173	110
Class II. Offences against property with violence	4,142	77	4,684	105
Class III. Offences against property without violence	7,768	1,367	9,648	2,080
Class IV. Malicious offences against property	606	19	608	35
Class V. Forgery and other offences relating to currency	358	76	395	95
Class VI. Other offences	996	101	1,313	121
Total	15,967	1,728	18,821	2,546
Federal statutes	1,530	179	1,583	168
Total ¹	17,497	1,907	20,404	2,714

¹ Excludes Quebec and Alberta.

3.11 Convictions for summary conviction offences, by type, 1969 and 1970

Type of offence	1969 ¹	1970 ¹
CRIMINAL CODE		
Attempts, conspiracies, accessories, counselling	77,860	89,522
Attempt to commit suicide	179	206
Bawdy house	168	75
Causing disturbance by being drunk	189	126
Common assault	3,131	2,783
Communicating venereal disease	7,191	7,720
Contempt of court	9	23
Corrupting morals	19	83
Cruelty to animals	254	201
Damage not exceeding \$50 and other interference with property	133	53
Disorderly conduct	3,009	2,921
Duty of persons to provide necessities	10,090	11,024
Duty to safeguard dangerous places	293	130
Fraudulently obtaining food or lodging	9	17
Fraudulently obtaining transportation	829	883
Gaming, betting, lotteries	143	180
Intimidation	647	513
Killing or injuring bird or animal other than cattle	233	216
Motor vehicle	37	45
Criminal negligence in operation	243	258
Dangerous driving	2,334	2,035
Dangerous operation of vessel, etc.	98	343
Driving while impaired	25,876	7,197
Driving while disqualified	4,823	4,349
Driving while intoxicated	1,257	19,121
Driving with more than 80 mg in blood	143	13,554
Failing to stop at scene of accident	3,631	3,232
Motor vehicle equipped with smoke screen	39	13
Taking motor vehicle without consent	1,490	1,360
Offensive weapons	968	1,103
Personating peace officer	54	30
Recognizance, breach of	1,781	1,927
Vagrancy	4,046	3,971
Other criminal code	4,514	3,830

3.11 Convictions for summary conviction offences, by type, 1969 and 1970 (concluded)

Type of offence	1969 ¹	1970 ¹
FEDERAL STATUTES	25,777	25,895
Customs	111	89
Excise	1,175	1,015
Fisheries	924	927
Food and drugs	280	958
Harbour board and merchant seamen's	113	116
Immigration	311	267
Income tax	8,361	5,882
Indian		
Intoxication	1,110	307
Other	453	628
Juvenile delinquents		
Adults who contribute to delinquency	785	664
Incorrigibility	1,463	639
Inducing child to leave home, etc.	13	22
Sexual immorality	18	19
Lord's day	17	4
National defence	361	97
Railway	774	839
Unemployment insurance	2,603	2,374
Weights and measures	79	74
Other federal statutes	6,826	10,974
PROVINCIAL STATUTES	1,473,852	1,215,521
Children of unmarried parents	1,496	1,436
Deserted wives and children's maintenance	7,963	7,796
Game and fisheries	6,324	6,826
Highway traffic		
Driving without care	65,442	38,643
Other traffic	1,204,621	986,685
Liquor control	165,591	149,407
Master and servant	545	718
Medical, dentistry and pharmacy	79	30
Mental diseases	210	155
Prairie and forest fire prevention	71	56
Protection of children	3,802	4,635
Public health	453	306
School laws	198	187
Other provincial statutes	17,057	18,641
MUNICIPAL BY-LAWS	133,547	120,905
Intoxication	3,474	1,431
Traffic	83,431	82,550
Other	46,642	36,924
Total convictions	1,711,036	1,451,843

¹ Excludes Quebec and Alberta.**3.12 Juvenile delinquents, by group of offence, and ratio per 100,000 population, 1969-71**

Group of offence		1969 ^{1,2}	1970 ²	1971 ³
Delinquencies against the person	<i>No.</i>	883	857	849
	<i>Ratio</i>	21	20	19
Delinquencies against property with violence	<i>No.</i>	6,834	5,864	5,518
	<i>Ratio</i>	160	136	127
Delinquencies against property without violence	<i>No.</i>	11,122	11,629	11,292
	<i>Ratio</i>	261	270	259
Wilful and forbidden acts in respect of certain property	<i>No.</i>	1,866	1,841	1,748
	<i>Ratio</i>	44	43	40
Forgery and delinquencies relating to currency	<i>No.</i>	106	162	147
	<i>Ratio</i>	3	4	3
Other delinquencies	<i>No.</i>	6,386	8,035	9,022
	<i>Ratio</i>	150	186	207
Total convictions	<i>No.</i>	27,197	28,388	28,576
	<i>Ratio</i>	640	658	656

¹ For 1969, ratio of population 7-17 years of age, depending on the province.² Excludes Manitoba.³ Excludes Manitoba and Alberta.

3.13 Juvenile delinquents classified by type of delinquency, 1969-71

Delinquency	1969 ¹	1970 ¹	1971 ²
Manslaughter and murder and causing death by criminal negligence	4	8	4
Murder, attempt	1	—	6
Common assault	484	421	396
Other offences against the person	302	428	443
Breaking and entering a place	6,647	5,665	5,328
Robbery and extortion	168	199	190
Theft and having in possession	10,981	9,709	9,546
False pretences and fraud and corruption	141	174	171
Arson	111	110	100
Other interference with property	1,723	1,731	1,648
Incorrigibility and vagrancy	1,213	1,394	1,211
Immorality	285	178	141
Theft, auto	—	1,017	916
Joyriding	—	729	659
Various other delinquencies	5,137	6,625	7,817
Total	27,197	28,388	28,576

¹ Excludes Manitoba.² Excludes Manitoba and Alberta.

3.14 Disposition of delinquents, by type of sentence, 1969-71

Type of sentence		1969 ¹	1970 ¹	1971 ²
Reprimanded	No.	653	440	377
	%	2.4	1.1	0.9
Probation of court	No.	13,309	13,185	12,468
	%	48.9	33.4	31.3
Protection of parents	No.	1,880	1,475	1,607
	%	6.9	3.7	4.0
Fined or made restitution	No.	3,264	3,804	4,604
	%	12.0	9.6	11.5
Detained indefinitely	No.	235	478	301
	%	0.9	1.2	0.8
Sent to training school	No.	2,334	2,425	2,525
	%	8.6	6.2	6.3
Final disposition suspended	No.	5,500	6,563	6,678
	%	20.2	16.6	16.7
Mental hospital	No.	22	18	16
	%	0.1	0.1	0.1
Other	No.	..	11,070	11,338
	%	..	28.1	28.4

¹ Excludes Manitoba.² Excludes Manitoba and Alberta.

3.15 Juvenile delinquents in Manitoba, by nature of delinquency and by disposition, 1970

Delinquency	Disposition				
	Reprimand	Indefinite detention	Probation	Fine or restitution	Training school
Criminal code	58	—	894	170	80
Against the person	3	—	89	23	14
Against property with violence	17	—	411	45	31
Against property without violence	29	—	318	59	22
Malicious offences against property	4	—	28	22	5
Against currency and forgery	—	—	3	—	—
Other	5	—	45	21	8
Federal statutes	1	—	64	7	7
Provincial statutes	103	2	83	248	2
Municipal by-laws	—	—	—	3	—
Total	162	2	1,041	428	89
	Mental hospital	Suspended disposition	Suspended driver's licence	Not stated	Total
Criminal code	1	131	23	2,489	3,846
Against the person	—	10	1	133	273
Against property with violence	—	37	—	575	1,116
Against property without violence	—	67	4	1,318	1,817
Malicious offences against property	—	5	—	267	331
Against currency and forgery	—	—	—	11	14
Other	1	12	18	185	295
Federal statutes	—	16	—	177	272
Provincial statutes	—	118	26	837	1,419
Municipal by-laws	—	—	—	33	36
Total	1	265	49	3,536	5,573

3.16 Juvenile delinquents in Manitoba and Alberta, by nature of delinquency and disposition, 1971

Delinquency	Disposition				
	Reprimand	Indefinite detention	Probation	Fine or restitution	Training school
Criminal code	109	2	2,489	262	192
Against the person	6	—	159	10	8
Against property with violence	26	1	732	44	49
Against property without violence	53	1	1,168	120	78
Malicious offences against property	9	—	157	38	11
Against currency and forgery	1	—	29	—	1
Other	14	—	244	50	45
Federal statutes	8	—	157	13	10
Provincial statutes	105	2	281	395	9
Municipal by-laws	332	—	50	820	5
Total	554	4	2,977	1,490	216
	Mental hospital	Suspended disposition	Suspended driver's licence	Not stated	Total
Criminal code	3	285	41	4,429	7,812
Against the person	1	18	5	253	460
Against property with violence	1	56	1	777	1,687
Against property without violence	—	145	3	2,419	3,987
Malicious offences against property	—	28	—	534	777
Against currency and forgery	—	1	—	28	60
Other	1	37	32	418	841
Federal statutes	—	34	—	393	615
Provincial statutes	1	121	37	1,116	2,067
Municipal by-laws	—	60	81	460	1,808
Total	4	500	159	6,398	12,302

3.17 Population in provincial adult institutions and in training schools, as at Mar. 31, 1969 and Dec. 31, 1970 and 1971

Type of institution	1969	1970	1971
Provincial adult institutions	3,900	12,186	12,365
Training schools	3,793	2,261	1,959
For boys	2,686	1,513	1,308
For girls	1,107	748	651

3.18 Population in penitentiaries, years ended Mar. 31, 1969 and Dec. 31, 1970 and 1971

Item	1969	1970	1971
In custody at beginning of year	7,026	7,159	7,109
Received during year	8,204	11,276	11,899
Discharged during year	8,113	11,327	11,522
In custody at end of year	7,117	7,108	7,486

Sources

3.1 Legal Research and Planning Section, Department of Justice.

3.2 - 3.18 Judicial Division, Institutional and Public Finance Statistics Branch, Statistics Canada.

Chapter 4

Government organization

4.1 Organization of the federal government

In any political system there are processes whereby people express their demands to the government; whereby priorities are established among those demands and policies formulated for their implementation; and, finally, whereby the policies are implemented. The institutions, both governmental and non-governmental, through which these processes are carried on vary from country to country and tend to evolve over time, so that in any given country the roles of the institutions in such processes also change over time. This Section describes the institutions of the Government of Canada and their current roles in the fundamental processes of the Canadian political system.

In most countries, the legal framework within which political processes take place is provided through a constitution. The written Constitution of Canada is embodied in the British North America Acts. The first of these Acts, passed by the British Parliament in 1867, not only established the institutions through which legislative, executive and judicial powers are exercised in Canada but also established a federal form of government. A central government – the federal government – has legislative jurisdiction primarily over matters of national concern and over those matters not otherwise assigned to the provinces. The ten provincial governments are assigned specific areas of legislative jurisdiction, including municipal institutions.

In Canada, there is a fusion of the executive and legislative powers as in Britain. Formal executive power in Canada is vested in the Queen, whose authority is delegated to the Governor General, her representative. Legislative power is vested in the Parliament of Canada which consists of the Queen, an appointed upper house called the Senate and a lower house called the House of Commons, elected by universal adult suffrage. The independence of the judiciary is safeguarded through the constitutional provision that superior court judges are appointed by the Governor in Council (i.e. by the Governor General on advice of the Cabinet) and that they hold office during good behaviour and are removable only by the Governor General on address of the Senate and the House of Commons. In other words, judges cannot be removed unless both Houses of Parliament, the Cabinet and the Governor General agree.

In the Canadian system of government, where the executive is part of Parliament, democratic principles could not be adhered to without the constitutional convention that the government is responsible to the House of Commons. When the government loses the confidence of the House of Commons, it must resign or the Prime Minister must request the Governor General to dissolve Parliament and call a general election. Although there are conventions that help in deciding when the government has lost the confidence of the House, all doubt is removed when the government is defeated on a motion on which it had explicitly staked its life or when a motion of non-confidence in the government is passed. If the government resigns, the Governor General can call on the Leader of the Opposition (who is usually the leader of the political party that has the second largest number of seats in the House of Commons) to form a new government. If a government that has lost the confidence of the House of Commons and is granted a dissolution is defeated in the ensuing general election and if no clear majority is elected, the government has two choices – it can remain in office and seek the confidence of the House of Commons when it meets or it can resign at once. If it resigns, the Governor General will normally ask the leader of another party, usually the one that has won the most seats, to form a new government. The primary responsibility of the Governor General in either circumstance is to provide the nation with a government capable of carrying on with the support of the House of Commons.

The Prime Minister and his Cabinet, who with one or two exceptions are members of the House of Commons, are, formally speaking, the Queen's advisers. In fact, there are virtually no significant actions that can be taken by the Queen, or her representative in Canada, the Governor General, without the advice of the Cabinet. The Prime Minister and his Cabinet determine executive policies and are responsible for them to the House of Commons. The Queen and her representative, the Governor General, have the traditional rights to be consulted, to encourage and to warn the government.

The demands of Canadian citizens are directed primarily to members of Parliament, directly to Cabinet Ministers or indirectly to Cabinet Ministers through the Public Service. These demands may originate from individuals, political parties or pressure groups; members of Parliament, Cabinet Ministers and public servants may take the initiative in suggesting the adoption of policies and programs in the public interest. Although the roles performed by Parliament, the Public Service and the Cabinet cannot be defined with absolute precision, the following stylized description deals with the most obvious and primary roles of each in the Canadian political system.

The determination of public policy rests with the Cabinet but begins generally with the formulation of policy by the individual Ministers. In practice this usually means that public servants under the direction of a Minister formulate policy proposals which he then submits, if he agrees, to his colleagues in the Cabinet. The Cabinet studies the policies submitted and chooses those it wishes to implement. The Cabinet may itself formulate policies, but it may also decide to select a policy from among the alternatives submitted. The establishment of a Cabinet committee system that operates on a functional basis and, more especially, the establishment of the Cabinet Committee on Priorities and Planning represent attempts to enhance the capacity of Cabinet in its primary role of policy determination and priority setting.

In conformity with the concept of the rule of law, all executive acts must be authorized by law, and laws are enacted by Parliament. Executive acts may be carried out under a statute which specifies how a policy is to be implemented, or under a statute which authorizes the Governor in Council to undertake specific acts. Much of the activity of the Public Service is authorized through the yearly enactment of Appropriation Acts authorizing the expenditure of public funds for specific purposes. In terms of the operations of the government, Parliament is concerned primarily with the discussion and authorization of policy submitted for its approval by the government. The approval of these policies is accomplished mainly through the enactment of legislation. In an attempt to enable the House of Commons to perform this role more efficiently, the government introduced numerous changes in the rules of procedure. Adopted in February 1970, they are included in the Standing Orders of the House of Commons.

The most significant feature of these processes is that Cabinet Ministers, who constitute the government, have seats in Parliament and thus share in the exercise of the legislative power. In fact, the majority of legislation enacted by Parliament is submitted by the government; the Constitution provides that all financial measures must originate in the House of Commons.

The role of the judiciary is to apply the laws enacted by Parliament. In the Canadian system of government, Parliament is supreme. This means, among other things, that the judiciary must apply the law as Parliament has enacted it and cannot declare laws to be unconstitutional if they are within the legislative jurisdiction of Parliament or of the legislature that enacted them.

The administration of legislation and of the government's policies is carried out through a Public Service comprising employees organized as of 1972 in 25 departments of government and a large number of special boards, commissions and Crown corporations or other agencies. Legislation and tradition have combined to develop a non-partisan Public Service, the tenure of whose employees is unaffected by changes in government. The only direct contact between public servants and Parliament occurs when they are called to appear as witnesses before parliamentary committees. On these occasions, public servants do not, by convention, express opinions on public policy but usually appear as experts and to explain existing policy. The public servants who head agencies such as the Public Service Commission, the Office of the Auditor General, the Office of the Commissioner of Official Languages, the Library of Parliament or the Office of the Chief Electoral Officer, all of which have a special relationship to Parliament and are not subject to direction by the government on matters of policy, may appear before parliamentary committees to explain the policies of their agencies.

The growth in number, variety and complexity of the demands placed on the government requires it not only to adjust its policies in response to these demands but, with increasing frequency, to make significant changes in the organization of the Public Service so that the required policies can be properly implemented. Major reorganization of the Public Service has been authorized by the passage of Government Organization Acts in 1966, 1969 and 1970.

4.1.1 The Executive

The Crown. The British North America (BNA) Act of 1867 (Sect. 9) provides that “the Executive Government and authority of and over Canada is ... vested in the Queen”. The functions of the Crown (that is, the formal executive represented by the Queen), which are substantially the same as those of the Crown in relation to the British government, are discharged in Canada by the Governor General.

The Sovereign. Since Confederation Canada has had six sovereigns: Victoria, Edward VII, George V, Edward VIII, George VI and Elizabeth II. The present sovereign, Queen Elizabeth, is not only Queen of Canada but of several other countries in the Commonwealth. Her Majesty’s title for Canada was approved by Parliament and established by a Royal proclamation on May 28, 1953: Elizabeth the Second, by the Grace of God of the United Kingdom, Canada and Her other Realms and Territories Queen, Head of the Commonwealth, Defender of the Faith.

The Queen seldom personally discharges the functions of the Crown in respect of Canada except on such occasions as the periodic appointment of the Governor General which is done on the recommendation of the Prime Minister of Canada. On the occasion of a Royal visit, the Queen may participate in those ceremonies that are normally carried out in her name by the Governor General, such as the opening and dissolution of Parliament, the assent to Bills passed by the House of Commons and the Senate, and the granting of a general amnesty.

The Governor General. The Governor General is the representative of the Crown in Canada. The present incumbent, The Right Honourable Roland Michener, is the twentieth Governor General since Confederation and was appointed by Queen Elizabeth on March 29, 1967. Constitutionally, the Queen of Canada is the Canadian head of state but the Governor General fulfils her role in this regard on her behalf. The Letters Patent revised and re-issued under the Great Seal of Canada on October 1, 1947 authorized the Governor General “to exercise on the advice of his Canadian ministers, all Her Majesty’s powers and authorities in respect of Canada”.

Following are the Governors General of Canada since Confederation, with dates of appointment:

The Viscount Monck of Ballytramon, June 1, 1867

The Baron Lisgar of Lisgar and Bailieborough, December 29, 1868

The Earl of Dufferin, May 22, 1872

The Marquis of Lorne, October 5, 1878

The Marquis of Lansdowne, August 18, 1883

The Baron Stanley of Preston, May 1, 1888

The Earl of Aberdeen, May 22, 1893

The Earl of Minto, July 30, 1898

The Earl Grey, September 26, 1904

Field Marshal H.R.H. The Duke of Connaught, March 21, 1911

The Duke of Devonshire, August 19, 1916

General The Baron Byng of Vimy, August 2, 1921

The Viscount Willingdon of Ratton, August 5, 1926

The Earl of Bessborough, February 9, 1931

The Baron Tweedsmuir of Elsfeld, August 10, 1935

Major General The Earl of Athlone, April 3, 1940

Field Marshal The Viscount Alexander of Tunis, March 21, 1946

The Right Honourable Vincent Massey, January 24, 1952

General The Right Honourable Georges P. Vanier, August 1, 1959

The Right Honourable Roland Michener, March 29, 1967.

One of the most important responsibilities of the Governor General is to ensure that the country always has a government. If the office of the Prime Minister becomes vacant because of death, resignation or defeat of the government in the House of Commons, the Governor General must see that the office of the Prime Minister is filled and that a new government is formed.

As the representative of the Queen — one of the three elements of the Canadian Parliament, the others being the Senate and the House of Commons — the Governor General summons, prorogues and dissolves Parliament on the advice of the Prime Minister. He signs Orders in Council, commissions and many other state documents, and gives his assent to Bills

that have been passed in both Houses of Parliament and which thereby become Acts of Parliament with the force of law (unless Parliament prescribes specifically otherwise). Like the Queen, he is bound in virtually all cases to carry out these duties in accordance with the advice of his responsible Ministers. Should he not wish to accept their advice, and should they maintain that advice, his only alternative is to replace the existing government with a new government. This alternative could be exercised only if, at the same time, the principle of responsible government could be upheld. This means that the Governor General's discretion in choosing another government is strictly limited to a situation in which a person other than the existing Prime Minister could command the confidence of the House of Commons.

In Canada, as in other constitutional monarchies, there is a clear division between the executive and representational functions of state. The Prime Minister, as the elected political leader of the country, is the chief executive and head of the government. The Governor General, on the other hand, is not involved in any way in party politics or political affiliation and he is, therefore, in a position to represent Canada as a whole and to speak for Canadians on ceremonial and state occasions. In effect, the Governor General has become an important symbol of the unity of Canada and of the continuity of its institutions and national life.

The Governor General is Canada's host to visiting heads of state and other distinguished visitors from abroad. He extends hospitality of many forms to many Canadians and lends his patronage in support of a great variety of activities throughout the country. The Governor General receives the Letters of Credence of Ambassadors appointed to Canada, receives Commonwealth High Commissioners on appointment and holds investitures for the conferring of honours and awards.

The Privy Council. The BNA Act of 1867 (Sect. 11) provides for "a council to aid and advise in the Government of Canada, to be styled the Queen's Privy Council for Canada...". The Council that in fact advises the Queen's representative, the Governor General, is the Committee of the Privy Council whose membership is identical to that of Cabinet.

Membership in the Privy Council is for life. As at December 31, 1972, there were 132 members, including the 30 Cabinet Ministers of the government of the day, former Cabinet Ministers, various members of the Royal Family, past and present Commonwealth Prime Ministers, Premiers of provinces, former Speakers of the Senate and the House of Commons of Canada and a few distinguished civilians. A member of the Privy Council of Canada is styled "Honourable" and may use the initials "P.C." after his name. A member of the Privy Council of Britain is styled "Right Honourable". The Governor General, the Chief Justice of Canada and the Prime Minister of Canada automatically assume the title "Right Honourable" on assumption of office.

The Privy Council as a whole has met on only a few ceremonial occasions; its constitutional responsibilities to advise the Crown on matters respecting the Government of Canada are discharged exclusively by the Committee of the Privy Council (the Cabinet). The legal instruments through which executive authority is exercised are called Orders in Council. The procedure is for the Committee of the Privy Council to make a submission to the Governor General for his approval which he is obliged to give in almost all circumstances; with this approval, the submission becomes an Order in Council. Meetings of the Committee of the Privy Council or a sub-committee of this Committee are held without formal ceremony.

The office of the President of the Privy Council was originally occupied, more often than not, by the Prime Minister but from time to time, especially in recent years, it has been occupied by another Minister. On July 5, 1968, the Prime Minister explained that the incumbent of the office of President of the Privy Council would also be the Government Leader in the House of Commons, with the broad responsibility of directing the business of the House, including such matters as supervision of the government's replies to questions in the House and of parliamentary returns in general, and also a special responsibility on behalf of the government of ensuring that Parliament, through its operations and organization of business, can effectively discharge its vital role in the Canadian political process under the increasing pressure of modern government.

The following, with the dates when they were sworn in, were members of the Queen's Privy Council for Canada as at December 31, 1972:

Hon. Thomas Alexander Crerar, October 12, 1917
Hon. Henry Herbert Stevens, September 21, 1921

Hon. William Earl Rowe, August 30, 1935
Hon. Colin William George Gibson, July 8, 1940

Members of the Queen's Privy Council (concluded)

- Hon. Joseph Thorarinn Thorson, June 11, 1941
 Rt. Hon. Louis Stephen St. Laurent, December 10, 1941
 Hon. Joseph Arthur Jean, April 18, 1945
 Hon. Lionel Chevrier, April 18, 1945
 Hon. Paul Joseph James Martin, April 18, 1945
 Hon. Douglas Charles Abbott, April 18, 1945
 Hon. Milton Fowler Gregg, September 2, 1947
 Hon. Stuart Sinclair Garson, November 15, 1948
 Hon. Hugues Lapointe, August 25, 1949
 Hon. Gabriel-Édouard Rinfret, August 25, 1949
 Hon. Walter Edward Harris, January 18, 1950
 Hon. George Prudham, December 13, 1950
 Hon. James Sinclair, October 15, 1952
 Hon. William Ross Macdonald, May 12, 1953
 Hon. George Alexander Drew, May 12, 1953
 Hon. John Whitney Pickersgill, June 12, 1953
 Hon. Jean Lesage, September 17, 1953
 Hon. George Carlyle Marler, July 1, 1954
 Hon. Roch Pinard, July 1, 1954
 Hon. Paul Theodore Hellyer, April 26, 1957
 Rt. Hon. John George Diefenbaker, June 21, 1957
 Hon. Howard Charles Green, June 21, 1957
 Hon. Donald Methuen Fleming, June 21, 1957
 Hon. George Hees, June 21, 1957
 Hon. Léon Balcer, June 21, 1957
 Hon. George Randolph Pearkes, June 21, 1957
 Hon. Gordon Churchill, June 21, 1957
 Hon. Edmund Davie Fulton, June 21, 1957
 Hon. Douglas Scott Harkness, June 21, 1957
 Hon. Ellen Louks Fairclough, June 21, 1957
 Hon. John Angus MacLean, June 21, 1957
 Hon. Michael Starr, June 21, 1957
 Hon. William McLean Hamilton, June 21, 1957
 Hon. James MacKerras Macdonnell, June 21, 1957
 Hon. William Joseph Browne, June 21, 1957
 Hon. Jay Waldo Monteith, August 22, 1957
 Hon. Francis Alvin George Hamilton, August 22, 1957
 H.R.H. The Prince Philip, Duke of Edinburgh, October 14, 1957
 Hon. Henri Courtemanche, May 12, 1958
 Hon. David James Walker, August 20, 1959
 Hon. Joseph-Pierre-Albert Sévigny, August 20, 1959
 Hon. Hugh John Flemming, October 11, 1960
 Hon. Noël Dorion, October 11, 1960
 Hon. Walter Dinsdale, October 11, 1960
 Hon. George Ernest Halpenny, October 11, 1960
 Hon. Leslie Miscampbell Frost, December 28, 1961
 Hon. Jacques Flynn, December 28, 1961
 Hon. Paul Martineau, August 9, 1962
 Hon. Richard Albert Bell, August 9, 1962
 H.E. Rt. Hon. Roland Michener, October 15, 1962
 Hon. Marcel-Joseph-Aimé Lambert, February 12, 1963
 Hon. Théogène Ricard, March 18, 1963
 Hon. Frank Charles McGee, March 18, 1963
 Hon. Martial Asselin, March 18, 1963
 Hon. Walter Lockhart Gordon, April 22, 1963
 Hon. Mitchell William Sharp, April 22, 1963
 Hon. Azellus Denis, April 22, 1963
 Hon. George James McIlraith, April 22, 1963
 Hon. William Moore Benidickson, April 22, 1963
 Hon. Arthur Laing, April 22, 1963
 Hon. Maurice Lamontagne, April 22, 1963
 Hon. Lucien Cardin, April 22, 1963
 Hon. Allan Joseph MacEachen, April 22, 1963
 Hon. Jean-Paul Deschatelets, April 22, 1963
 Hon. Hédard Robichaud, April 22, 1963
 Hon. John Watson MacNaught, April 22, 1963
 Hon. Roger Teillet, April 22, 1963
 Hon. Judy V. LaMarsh, April 22, 1963
 Hon. Charles Mills Drury, April 22, 1963
 Hon. John Robert Nicholson, April 22, 1963
 Hon. Harry Hays, April 22, 1963
 Hon. John Joseph Connolly, February 3, 1964
 Hon. Maurice Sauvé, February 3, 1964
 Hon. Yvon Dupuis, February 3, 1964
 Hon. George Stanley White, June 25, 1964
 Hon. Major James William Coldwell, June 25, 1964
 Hon. Edgar John Benson, June 29, 1964
 Hon. Léo Alphonse Joseph Cadieux, February 15, 1965
 Hon. Lawrence T. Pennell, July 7, 1965
 Hon. Jean-Luc Pepin, July 7, 1965
 Hon. Alan Aylesworth Macnaughton, October 25, 1965
 Hon. Jean Marchand, December 18, 1965
 Hon. John James Greene, December 18, 1965
 Hon. Joseph Julien Jean-Pierre Côté, December 18, 1965
 Hon. John Napier Turner, December 18, 1965
 Hon. Maurice Bourget, February 22, 1966
 Rt. Hon. Pierre Elliott Trudeau, April 4, 1967
 Hon. Joseph-Jacques-Jean Chrétien, April 4, 1967
 Hon. Pauline Vanier, April 11, 1967
 Hon. John Parmenter Robarts, July 5, 1967
 Hon. Louis J. Robichaud, July 5, 1967
 Hon. Dufferin Roblin, July 5, 1967
 Hon. William Andrew Cecil Bennett, July 5, 1967
 Hon. Alexander B. Campbell, July 5, 1967
 Hon. Ernest Charles Manning, July 5, 1967
 Hon. Joseph Robert Smallwood, July 5, 1967
 Hon. Robert L. Stanfield, July 7, 1967
 Rt. Hon. John Robert Cartwright, September 4, 1967
 Hon. Charles Ronald McKay Granger, September 25, 1967
 Hon. Bryce Stuart Mackasey, February 9, 1968
 Hon. Donald Stovel Macdonald, April 20, 1968
 Hon. John Carr Munro, April 20, 1968
 Hon. Gérard Pelletier, April 20, 1968
 Hon. Jack Davis, April 26, 1968
 Hon. Horace Andrew Olson, July 6, 1968
 Hon. Jean-Eudes Dubé, July 6, 1968
 Hon. Stanley Ronald Basford, July 6, 1968
 Hon. Donald Campbell Jamieson, July 6, 1968
 Hon. Eric William Kierans, July 6, 1968
 Hon. Robert Knight Andras, July 6, 1968
 Hon. James Armstrong Richardson, July 6, 1968
 Hon. Otto Emil Lang, July 6, 1968
 Hon. Sydney John Smith, October 10, 1968
 Hon. Herbert Eser Gray, October 20, 1969
 Hon. Robert Douglas George Stanbury, October 20, 1969

Rt. Hon. Joseph Honoré G  rald Fauteux, March 23, 1970

Hon. Jean-Pierre Goyer, December 22, 1970

Hon. Alastair William Gillespie, August 11, 1971

Hon. Martin Patrick O'Connell, August 11, 1971

Hon. Patrick Morgan Mahoney, January 21, 1972

Hon. Stanley Haidasz, November 27, 1972

Hon. Eugene F. Whelan, November 27, 1972

Hon. Warren Allmand, November 27, 1972

Hon. J. Hugh Faulkner, November 27, 1972

Hon. Andr   Ouellet, November 27, 1972

Hon. Daniel J. MacDonald, November 27, 1972

Hon. Marc Lalonde, November 27, 1972

Hon. Jeanne Sauv  , November 27, 1972.

The Prime Minister. The Prime Minister is the leader of the political party requested by the Governor General to form the government, which almost always means that he is the leader of the party with the strongest representation in the House of Commons. His position is one of exceptional authority stemming in part from the success of the party at an election. The Prime Minister chooses his Cabinet. When a member of Cabinet resigns, the remainder of the Cabinet is undisturbed; when the Prime Minister vacates his office, this act normally carries with it the resignation of all those in the Cabinet.

One source of the authority of the Prime Minister lies in his prerogative to recommend the dissolution of Parliament. This prerogative, which in most circumstances permits him to precipitate an election, is a source of considerable power both in his dealings with his colleagues and with the opposition parties in the House of Commons.

Another source of the Prime Minister's authority derives from the appointments which he recommends including Privy Councillors, Cabinet Ministers, Lieutenant-Governors of the provinces, provincial administrators, Speakers of the Senate, Chief Justices of all courts, senators and certain senior executives of the Public Service. The Prime Minister also recommends the appointment of a new Governor General to the Sovereign, although this normally follows consultation with his Cabinet.

Following are the Prime Ministers since Confederation, with dates of administrations:

Rt. Hon. Sir John Alexander Macdonald, July 1, 1867 - November 5, 1873

Hon. Alexander Mackenzie, November 7, 1873 - October 16, 1878

Rt. Hon. Sir John Alexander Macdonald, October 17, 1878 - June 6, 1891

Hon. Sir John Joseph Caldwell Abbott, June 16, 1891 - November 24, 1892

Rt. Hon. Sir John Sparrow David Thompson, December 5, 1892 - December 12, 1894

Hon. Sir Mackenzie Bowell, December 21, 1894 - April 27, 1896

Rt. Hon. Sir Charles Tupper, May 1, 1896 - July 8, 1896

Rt. Hon. Sir Wilfrid Laurier, July 11, 1896 - October 6, 1911

Rt. Hon. Sir Robert Laird Borden, October 10, 1911 - October 12, 1917 (Conservative Administration)

Rt. Hon. Sir Robert Laird Borden, October 12, 1917 - July 10, 1920 (Unionist Administration)

Rt. Hon. Arthur Meighen, July 10, 1920 - December 29, 1921 (Unionist - National Liberal and Conservative Party)

Rt. Hon. William Lyon Mackenzie King, December 29, 1921 - June 28, 1926

Rt. Hon. Arthur Meighen, June 29, 1926 - September 25, 1926

Rt. Hon. William Lyon Mackenzie King, September 25, 1926 - August 6, 1930

Rt. Hon. Richard Bedford Bennett, August 7, 1930 - October 23, 1935

Rt. Hon. William Lyon Mackenzie King, October 23, 1935 - November 15, 1948

Rt. Hon. Louis Stephen St. Laurent, November 15, 1948 - June 21, 1957

Rt. Hon. John George Diefenbaker, June 21, 1957 - April 22, 1963

Rt. Hon. Lester Bowles Pearson, April 22, 1963 - April 20, 1968

Rt. Hon. Pierre Elliott Trudeau, April 20, 1968 - ...

The Cabinet. The Cabinet's primary responsibility in the Canadian political system is to determine priorities among the demands expressed by the people and to define policies to meet those demands. The Cabinet is a committee of Ministers chosen by the Prime Minister, generally from among members of the House of Commons, although one or two Cabinet Ministers are usually chosen from the Senate including the Leader of the Government in the Senate. It is unusual for a senator to head a department of government because the Constitution provides that measures for appropriating public funds or imposing taxes must originate in the House of Commons. If a senator headed a department another Minister in the House of Commons would have to speak on his behalf in respect of its affairs.

As at December 31, 1972, the following were members of the twentieth Ministry:

Prime Minister, Rt. Hon. Pierre Elliott Trudeau

Leader of the Government in the Senate, Hon. Paul Joseph James Martin

Secretary of State for External Affairs, Hon. Mitchell William Sharp

President of the Queen's Privy Council for Canada, Hon. Allan Joseph MacEachen

President of the Treasury Board, Hon. Charles Mills Drury

Members of the twentieth Ministry (concluded)

Minister of Transport, Hon. Jean Marchand
 Minister of Finance, Hon. John Napier Turner
 Minister of Indian Affairs and Northern Development, Hon. Joseph-Jacques-Jean Chrétiens
 Minister of Energy, Mines and Resources, Hon. Donald Stovel Macdonald
 Minister of Labour, Hon. John Carr Munro
 Minister of Communications, Hon. Gérard Pelletier
 Minister of the Environment, Hon. Jack Davis
 Minister of Public Works, Hon. Jean-Eudes Dubé
 Minister of State for Urban Affairs, Hon. Stanley Ronald Basford
 Minister of Regional Economic Expansion, Hon. Donald Campbell Jamieson
 Minister of Manpower and Immigration, Hon. Robert Knight Andras
 Minister of National Defence, Hon. James Armstrong Richardson
 Minister of Justice and Attorney General of Canada, Hon. Otto Emil Lang
 Minister of Consumer and Corporate Affairs, Hon. Herbert Eser Gray
 Minister of National Revenue, Hon. Robert Douglas George Stanbury
 Minister of Supply and Services, Hon. Jean-Pierre Goyer
 Minister of Industry, Trade and Commerce, Hon. Alastair William Gillespie
 Minister of State, Hon. Stanley Haidasz
 Minister of Agriculture, Hon. Eugene Francis Whelan
 Solicitor General of Canada, Hon. Warren Allmand
 Secretary of State of Canada, Hon. James Hugh Faulkner
 Postmaster General, Hon. André Ouellet
 Minister of Veterans Affairs, Hon. Daniel Joseph MacDonald
 Minister of National Health and Welfare, Hon. Marc Lalonde
 Minister of State for Science and Technology, Hon. Jeanne Sauvé.

Each Cabinet Minister usually assumes responsibility for one of the departments of government, although a Minister may hold more than one portfolio at the same time or he may hold one or more portfolios and one or more acting portfolios. A Minister without portfolio may be invited to join the Cabinet because the Prime Minister wishes to have him in the Cabinet without the heavy duties of running a department, or he may be invited to join the Cabinet to provide a suitable balance of regional representation. Because of the cultural and geographical diversity that exists in Canada, it is necessary for the Prime Minister to give more attention to the representational aspect of his Cabinet than, perhaps, his counterparts in many other countries.

With the enactment of the Ministries and Ministers of State Act (Government Organization Act, 1970), four categories of Ministers of the Crown may be identified: departmental Ministers, Ministers without portfolio, and two types of Ministers of state. Ministers of state "for designated purposes" may occupy an office created by proclamation. They are charged with responsibilities for developing new and comprehensive policies in areas where the development of such policies is of particular urgency and importance and have a mandate effectively determined by the Governor in Council which would be of such duration as to enable them to come to grips with the policy problems assigned to them. They may receive powers, duties and functions and exercise supervision and control of relevant elements of the Public Service, and may seek parliamentary appropriations independently of any Minister to cover the cost of their staff and operations. Other Ministers of state may be appointed to assist a departmental Minister in the discharge of his responsibilities. They may receive statutory powers, duties and functions and are limited in number by the appropriations that Parliament is willing to pass. They receive the same salary as a Minister without portfolio, as provided for in the estimates of the Minister with whom they are associated. Ministers in all four categories are appointed on the advice of the Prime Minister by commission under the Great Seal of Canada, to serve at pleasure, and to be accountable to Parliament as members of the government and for any responsibility that might be assigned to them by law or otherwise.

In Canada, almost all executive acts of the government are carried out in the name of the Governor in Council. The Committee of the Privy Council (the Cabinet) makes submissions to the Governor General for his approval, and he is bound by the Constitution in nearly all circumstances to accept them. About 2,900 such Orders in Council were enacted in 1971 and about 3,100 in 1972. Although some were of a fairly routine nature and did not require much discussion in Cabinet of the policy underlying them, others were of major significance and required extensive deliberation, sometimes covering months of meetings of officials and

Cabinet committees, as well as of the full Cabinet. In addition to the determination of the policy underlying the executive acts of the government, there are literally hundreds of other policy issues that must be resolved during the course of a year.

Cabinet must consider and approve the policy underlying each piece of proposed legislation. After it is drafted, proposed legislation must be examined in detail so that each clause and punctuation mark receives Cabinet approval. Recently, between 40 and 60 Bills have been considered by Cabinet during the course of a parliamentary session. Proposals for sweeping reform of large areas of government organization or administration, and policy to be adopted in fundamental constitutional changes or at a major international conference are among the issues which, on occasion, demand this extensive and detailed consideration.

The Cabinet committee system. It is clear that the nature and volume of policy issues to be decided on by Cabinet do not lend themselves to discussion by 25 or 30 Ministers. The first Cabinet committee system was established after the outbreak of World War II but, since that time and more particularly in recent years, growing demands placed on the executive have stimulated the development of new approaches to the delegation of some Cabinet functions to sub-committees.

Cabinet committees tend to have a membership of fewer than ten Ministers and therefore provide a forum capable of ensuring thorough study of policy proposals. The membership of Cabinet committees is confidential and the same rules of secrecy that apply to the deliberations of Cabinet apply to those of Cabinet committees. Otherwise, these committees might develop an importance and authority of their own which would be inconsistent with the principle of the collective responsibility of Ministers. The Prime Minister determines the establishment of Cabinet committees and their composition and terms of reference. Ministers may invite one or two officials to act as advisers during Cabinet committee meetings. The secretariats of the Cabinet committees are provided by the Privy Council Office and the Secretary of a Cabinet committee is usually also an Assistant Secretary to the Cabinet. Treasury Board, which is a Cabinet committee — or more precisely a sub-committee of the Committee of the Privy Council — is the only exception; it has its own secretariat headed by a secretary who has the status of a Deputy Minister.

Under the direction of the Prime Minister, the Secretary to the Cabinet prepares agenda and refers memoranda to Cabinet to the appropriate committee for study and report to the full Cabinet. Except where the Prime Minister instructs otherwise, all memoranda to Cabinet are submitted over the signature of the Minister concerned.

The terms of reference of Cabinet committees cover virtually the total area of government responsibility. All memoranda to Cabinet are first considered by a Cabinet committee, except when they are of exceptional urgency or when the Prime Minister directs otherwise, in which case an item may be considered immediately by the full Cabinet.

On April 30, 1968, the Prime Minister established a new format for Cabinet committees. The trend had been to develop many committees over time to meet situations which eventually disappeared. As a result, there had been a proliferation of committees and the terms of reference of some had become irrelevant. The new system reduced the number of standing committees of Cabinet to eight — four subject-matter committees and four co-ordinating committees. The four subject-matter committees set up were: External Policy and Defence; Economic Policy and Programs; Communications, Works and Urban Affairs; and Social Policy. The four co-ordinating committees were: Priorities and Planning; Legislation and House Planning; Federal-Provincial Relations; and Treasury Board. The accompanying chart indicates the relationship of these committees to the Cabinet process.

The arrangement established in 1968 was further modified in 1969 and 1970. The co-ordinating committees of Cabinet remained but the subject-matter or standing committees were: Economic Policy; External Policy and Defence; Social Policy; Science, Culture and Information; and Government Operations. These committees meet on a regular basis. In addition, there are five special committees of the Cabinet which meet as required: the Special Committee of Council which considers all submissions to the Governor in Council on behalf of the Committee of the Privy Council, and the Cabinet committees on the Public Service, Security and Intelligence, Labour Relations, and Western Grain Problems.

Although the importance of the Cabinet committee system may vary from government to government, evidence of the utility of the system is the growing reliance that has been placed on Cabinet committees since the end of World War II. The following is a brief outline of the

involvement of Cabinet and Cabinet committees in respect of a piece of legislation that the government ultimately introduces in the House of Commons or the Senate.

Either on the initiative of a Minister or his departmental officials, a policy proposal is prepared, the implementation of which will require new legislation or the amendment of existing legislation. The proposal is submitted over the Minister's signature for consideration by the appropriate subject-matter committee. If approval is given, the proposal goes forward to Cabinet for confirmation. If Cabinet confirms the Committee's decision, the Department of Justice is instructed by the Minister who made the proposal to prepare a draft Bill expressing in legal terms the intent of the policy proposal. If the draft Bill meets with the Minister's approval, he submits it to the Cabinet Committee on Legislation and House Planning where it is examined from a legal rather than a policy point of view. If the Committee agrees that the Bill is acceptable in all respects and could be introduced in Parliament, it so reports to Cabinet and Cabinet decides whether to confirm the Committee's decision. If confirmation is given, the Prime Minister initials the Bill and it is then introduced either in the Senate or the House of Commons, depending on constitutional and political considerations.

The order and manner in which a Bill is considered in Parliament is the responsibility of the President of the Privy Council and House Leader who negotiates these matters with his counterparts in the opposition parties. If a Bill is to be introduced in the Senate, the House Leader will discuss questions such as timing and tactics with the Leader of the Government in the Senate, who in turn will negotiate consideration of the Bill with his counterpart in the Senate.

The Privy Council Office is a secretariat providing staff support to the Select Committee of the Privy Council and to the Cabinet. For the purposes of the Financial Administration Act, it is considered a department of government. The Privy Council Office provides secretariats to serve the Cabinet, the Select Committee of the Privy Council and their various sub-committees. Since the Prime Minister is, in effect, chairman of the Cabinet, he is the Minister responsible for the Privy Council Office. The work of the Privy Council Office is directed by a public servant known as the Clerk of the Privy Council and Secretary to the Cabinet. He is the senior member of the Public Service.

Parliamentary secretaries. The Parliamentary Secretaries Act of June 1959 provided for the appointment of 16 parliamentary secretaries from among the members of the House of Commons to assist Ministers in the performance of their duties. That Act was amended by the Government Organization Act, 1970, which allows the number of parliamentary secretaries to equal the number of Ministers who hold offices listed in Section 4 of the Salaries Act (i.e., Ministers with departmental responsibilities, the Prime Minister and the President of the Privy Council). A parliamentary secretary works under the direction of his Minister and has no legal authority in respect of the department with which he is associated, nor is he given acting responsibility or any of the powers, duties and functions of a Minister in the event of his Minister's absence or incapacity. Parliamentary secretaries are appointed by the Prime Minister and hold office for 12 months.

At December 31, 1972, the following parliamentary secretaries, listed with their Ministers, were in office:

Pierre De Bané, Secretary of State for External Affairs
John M. Reid, President of the Privy Council
Joseph-Philippe Guay, Minister of Transport
J.-Roland Comtois, Minister of Finance
Len Marchand, Minister of Indian Affairs and Northern Development
Charles Turner, Minister of Labour
William Rompkey, Minister of the Environment
Ian Watson, Minister of State for Urban Affairs
Marcel Prud'homme, Minister of Regional Economic Expansion
Mark MacGuigan, Minister of Manpower and Immigration
Leonard Hopkins, Minister of National Defence
Raynald Guay, Minister of Justice
Herb Breau, Minister of Industry, Trade and Commerce
Léopold Corriveau, Minister of Agriculture
Gilles Marceau, Secretary of State
Norman A. Cafik, Minister of National Health and Welfare.

The passage of legislation. If a Bill is introduced in the House of Commons and approved there, it is then introduced in the Senate and follows a similar procedure. If a Bill is first introduced in the Senate, the reverse procedure is followed. There are three types of Bills: public Bills introduced by the government; public Bills introduced by private members of Parliament; and private Bills introduced by private members of Parliament. Each type is treated in a slightly different manner, and there are even differences in procedure when the House deals with government Bills introduced pursuant to "supply" and "ways and means" motions on the one hand, and other government Bills on the other. The following outline describes the procedure for a government Bill introduced in the House of Commons.

The sponsoring Minister gives notice that he intends to introduce a Bill on a given subject. Not less than 48 hours later he moves for leave to introduce the Bill and that the Bill be given first reading. This is granted automatically because this first step does not imply approval of any sort and it is only after first reading that the Bill is ordered printed for distribution to the members.

At a later sitting the Minister moves that the Bill be given second reading and that it be referred to an appropriate committee of the House of Commons. A favourable vote on the motion for second reading represents approval of the Bill in principle so there is often an extensive debate, which, according to the Standing Orders of the House of Commons, must be confined to the principle of the Bill. The debate culminates in a vote which, if favourable, results in the Bill being referred to the appropriate committee of the House, where it is given clause-by-clause consideration.

At the committee stage, expert witnesses and interested parties may be invited to give testimony pertaining to the Bill, and the proceedings may cover many weeks.

The House committee then prepares a report which it submits to the House of Commons which must then decide whether to accept the committee's report, including any amendments that the committee has made to the Bill. At the report stage any member may, on giving 24 hours notice, move an amendment to the Bill, and all such amendments are debated and put to a vote. Following that, a motion "that the bill be concurred in" or "that the bill, as amended, be concurred in", is put to the vote.

Following this report stage, the Minister moves that the Bill be given third reading and passage. Debate of this motion is limited to whether the Bill should be given third reading. Amendments are permitted at this stage but they must be of a general nature, similar to those allowed on second reading. If the vote is favourable, the Bill is then introduced in the Senate where it goes through a somewhat similar process. Since each House has its own rules of procedure, the processes in the two may not be identical, and are indeed not identical at this time. At the end of this procedure, the Bill is presented to the Governor General for Royal Assent and for his signature. Depending on the provisions in the Bill itself, it may come into force when it is signed by the Governor General, on an appointed day, or when it is officially proclaimed.

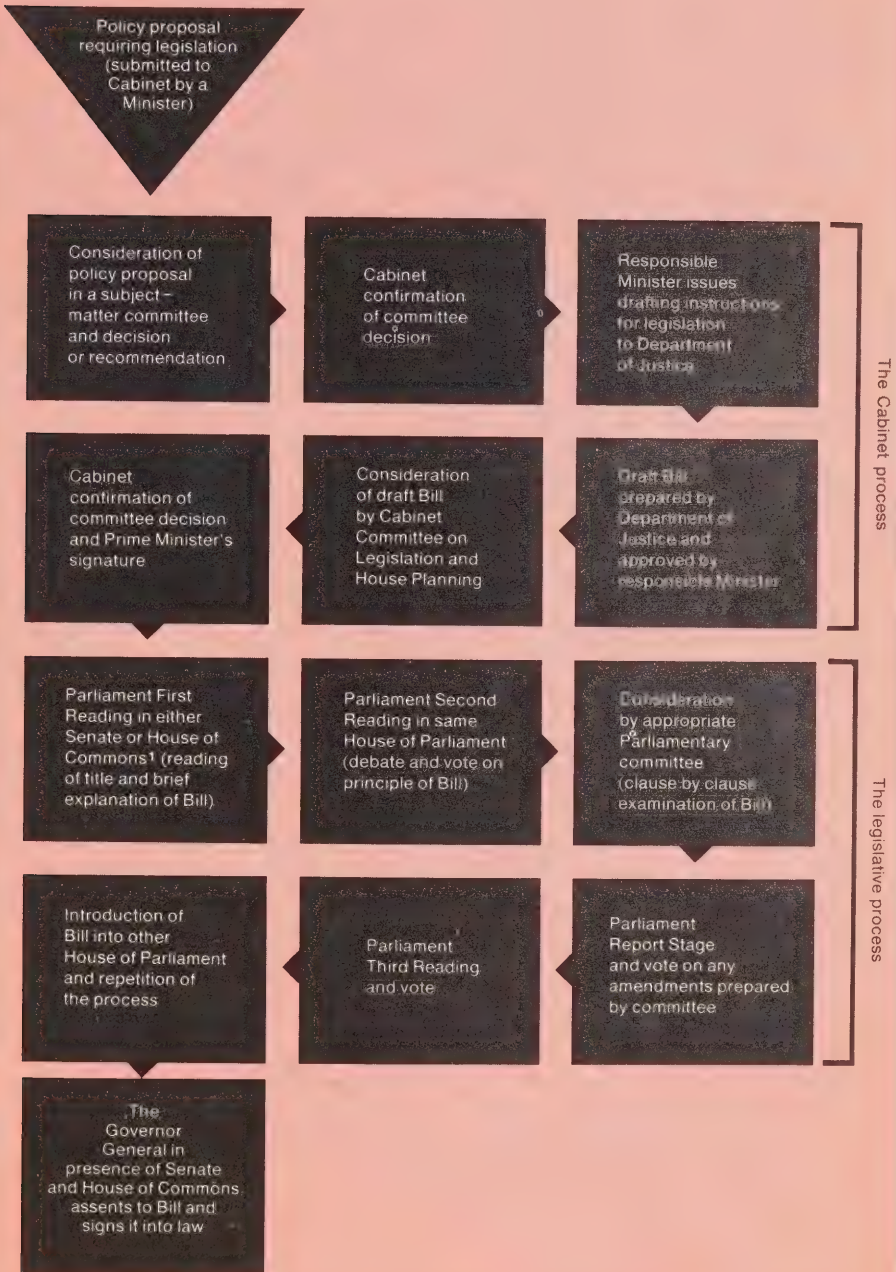
4.1.2 The Legislature

The federal legislative authority is vested in the Parliament of Canada consisting of the Queen, an upper house called the Senate, and the House of Commons. Bills may originate in either the Senate or the House, subject to the provisions of Section 53 of the British North America (BNA) Act, 1867, which provides that Bills for the appropriation of any part of the public revenue or the imposition of any tax or impost shall originate in the House of Commons. Bills must pass both Houses and receive Royal Assent before becoming law. In practice, most public Bills originate in the House of Commons although, at the request of the government, more have recently been introduced in the Senate in order that Bills may be dealt with there while the Commons is engaged in other matters such as the debate on the Speech from the Throne. Private Bills usually originate in the Senate. The Senate may delay, amend or even refuse to pass Bills sent to it from the Commons, but differences are usually settled without serious conflict.

Section 91 of the BNA Acts, 1867 to 1964, assigns to the Parliament of Canada legislative authority in very clearly specified areas. These are discussed in detail in Chapter 3.

Under Section 95, the Parliament of Canada may make laws in relation to agriculture and immigration concurrently with provincial legislatures although federal legislation is paramount in the event of conflict. An amendment to the BNA Act in 1951 (Br. Stat. 1950-51,

Passage of legislation



1. All money Bills must be introduced in the House of Commons.

c.32) authorized the Parliament of Canada to make laws in relation to old age pensions in Canada subject to the proviso that no such law should affect the operation of any provincial laws in relation to old age pensions. By the BNA Act, 1964, this amendment was extended to permit the payment of supplementary benefits, including survivors' and disability benefits irrespective of age, under a contributory pension plan.

Duration and sessions of Parliaments. The length and sessions of the first to the twelfth Parliaments, covering the period from Confederation to 1917, are given in the *1940 Canada Year Book*, p. 46; of the thirteenth to the seventeenth Parliaments in the 1945 edition, p. 53; of the eighteenth and nineteenth Parliaments in the 1957-58 edition, p. 46; of the twentieth to the twenty-third Parliaments in the 1965 edition, p. 65; and of the twenty-fourth to the twenty-eighth Parliaments in this edition, Table 4.1.

The Senate. The Senate has grown from an original membership of 72 at Confederation, through the addition of members to represent new provinces and the general increase in population to a total of 102 members; the latest change in representation was made when Newfoundland entered Confederation in 1949. The growth of representation in the Senate is summarized by province in Table 4.2.

Senators are appointed by the Governor General by instrument under the Great Seal of Canada. By constitutional usage the actual power of nominating senators resides in the Prime Minister whose advice the Governor General accepts in this regard. Until the passage of "An Act to make provision for the retirement of members of the Senate" (SC 1965, c.4), assented to on June 2, 1965, senators were appointed for life; that Act set 75 years as the age at which any person appointed to the Senate after the coming into force of the Bill would cease to hold his place in the Senate.

In each of the four main areas of Canada (Ontario, Quebec, Atlantic Provinces and Western Provinces) except Quebec, senators represent the whole of the province for which they are appointed; in Quebec, one senator is appointed for each of the 24 electoral divisions of what was formerly Lower Canada. The deliberations of the Senate are presided over by a Speaker appointed by the Governor in Council (in effect by the government) and government business in the Senate is sponsored by the Government Leader in the Senate.

The powers of the Senate, in all respects except one, are co-extensive with those of the House of Commons. The one exception is that under the Canadian Constitution all "money Bills", i.e. Bills to impose taxes or appropriate public moneys, must originate in the House of Commons. The concurrence of the Senate is necessary before any piece of legislation, public or private, can become law. Government Bills, other than money Bills, may be introduced in either House. A substantial percentage of these are now introduced in the Senate where they may be freely discussed and amended and the House of Commons thus given the benefit of their prior scrutiny by the Senate.

The Senate also retains its traditional role in respect of legislation originating in the House of Commons, namely, to take a "sober second look" at such legislation and amend it if necessary; such amendments are often concurred in by the House of Commons. If representatives of the two Houses cannot resolve disagreements arising from Senate amendments, the legislation cannot be further considered.

The Senate provides a national forum for the discussion of public issues and the airing of grievances from any part of Canada. Through its own committees and its participation in joint committees of both Houses the Senate is particularly active in making studies in depth on matters of public concern.

As at December 31, 1972 the following were members of the Senate:

Speaker, Hon. Muriel McQueen Fergusson

Leader of the Government, Hon. Paul Martin

Leader of the Opposition, Hon. Jacques Flynn

Clerk of the Senate and Clerk of the Parliaments, Robert Fortier

Newfoundland

Michael G. Basha

Eric Cook

Chesley William Carter

James Duggan

William John Petten

Frederick William Rowe

Prince Edward Island

Florence Elsie Inman

Orville Howard Phillips

Thomas Joseph Kickham

M. Lorne Bonnell

Nova Scotia

Gordon B. Isnor
 Donald Smith
 Harold Connolly
 Frederick Murray Blois
 John Michael Macdonald
 Frank C. Welch
 Margaret Norrie
 Henry D. Hicks
 Bernard Alasdair Graham
 1 vacancy

New Brunswick

George Percival Burchill
 Muriel McQueen Fergusson
 Fred A. McGrand
 Edgar Fournier
 Nelson Rattenbury
 Charles Robert McElman
 Donald Allan McLean
 Hervé J. Michaud
 Michel Fournier
 1 vacancy

Quebec

Léon Mercier Gouin
 Sarto Fournier
 Hartland de Montarville Molson
 J. Eugène Lefrançois
 Josie Alice Dinan Quart
 Louis Philippe Beaubien
 Jacques Flynn
 Maurice Bourget
 Louis P. Gélinas
 Romuald Bourque
 Azellus Denis
 Jean-Paul Deschatelets
 Alan Aylesworth Macnaughton
 J.G. Léopold Langlois
 Paul Desruisseaux
 Maurice Lamontagne
 Raymond Eudes
 Louis de Gonzague Giguère
 Paul C. Lafond
 H. Carl Goldenberg
 Renaude Lapointe
 Martial Asselin
 Jean-Pierre Côté
 1 vacancy

Ontario

Salter Adrian Hayden
 Norman McLeod Paterson

John J. Connolly
 David A. Croll
 Joseph A. Sullivan
 Lionel Choquette
 M. Grattan O'Leary
 Allister Grosart
 David James Walker
 Rhéal Belisle
 Daniel Aiken Lang
 John Black Aird
 William Moore Benidickson
 Douglas Keith Davey
 Andrew Ernest Thompson
 Keith Laird
 Mary Elizabeth Kinnear
 Richard James Stanbury
 Paul Martin
 Eugene A. Forsey
 George James McIlraith
 John James Greene
 Joan Neiman
 1 vacancy

Manitoba

J. Campbell Haig
 Paul Yuzyk
 Douglas Donald Everett
 Gildas L. Molgat
 William C. McNamara
 1 vacancy

Saskatchewan

William Albert Boucher
 Alexander Hamilton McDonald
 Hazen Robert Argue
 Herbert Orville Sparrow
 Sidney L. Buckwold
 1 vacancy

Alberta

Donald Cameron
 Earl Adam Hastings
 Harry William Hays
 James Harper Prowse
 Ernest C. Manning
 1 vacancy

British Columbia

John Lang Nichol
 Edward M. Lawson
 Ann Elizabeth Haddon Heath
 George Clifford van Roggen
 Guy Williams
 Arthur Laing.

The House of Commons. The BNA Act, 1867 provided that Quebec should have a fixed number of 65 members in the House of Commons and that each of the other provinces should be assigned such a number of members as would bear the same proportion to the number of its population as the number 65 bore to the number of the population of Quebec. This Act also provided that on completion of a Census in 1871 and after each subsequent decennial census the representation of the provinces would be readjusted, provided that the proportionate representation of the provinces fixed by the Act remained undisturbed.

In 1946 the House of Commons adopted a resolution stating that the effect of the provisions of the BNA Act relating to representation had not been satisfactory in that proportionate representation of the provinces according to population had not been maintained and that a more equitable apportionment of members to the various provinces

could be effected if readjustments were made on the basis of the population of all the provinces taken as a whole. The Act was amended accordingly in 1946 to provide a new rule to regulate representation in the House of Commons. Generally speaking, representation was fixed as follows:

The membership assigned to each province shall be computed by dividing the total population of the provinces by two hundred and fifty-four and by dividing the population of each province by the quotient so obtained.

This rule, employed in the redistribution of representation made in 1947, was effective in the general election of 1949.

After the completion of the 1951 Census it was apparent that, as a result of a wartime shift of population, a substantial reduction in the representation of Saskatchewan would ensue under the rules then regulating representation. Accordingly, in an effort to eliminate sharp reductions in provincial representation from one census to another, the BNA Act was again amended (RSC 1952, c.304, Sect. 51) to ensure that the representation of any province should not be reduced by more than 15% of the representation to which it was otherwise entitled after the last census, subject however to the qualification that the effect of the rule should not be to make the representation of a province with a smaller population greater than that of a province with a larger population.

In 1952, Parliament enacted legislation (RSC 1952, c.334), effective in the general election of 1953 and in each successive general election down to that of the twenty-seventh Parliament (November 8, 1965), which provided that representation in the House of Commons should be on the following basis:

Sect. 2. — Eighty-five members of the House of Commons shall be elected for the Province of Ontario, seventy-five for the Province of Quebec, twelve for the Province of Nova Scotia, ten for the Province of New Brunswick, fourteen for the Province of Manitoba, twenty-two for the Province of British Columbia, four for the Province of Prince Edward Island, seventeen for the Province of Saskatchewan, seventeen for the Province of Alberta, seven for the Province of Newfoundland, one for the Yukon Territory and one for Mackenzie district of the Northwest Territories, thus making a total of two hundred and sixty-five members.

The Representation Commissioner Act setting up the office and duties of the Representation Commissioner was given Royal Assent on December 21, 1963. The Electoral Boundaries Readjustment Act providing for the establishment of Electoral Boundaries Commissions to report on and to provide for the readjustment of the representation of the provinces in the House of Commons in accordance with the findings of the 1961 Census of Population was given Royal Assent on November 20, 1964.

Pursuant to Section 11 of the Electoral Boundaries Readjustment Act, the Dominion Statistician sent to the Representation Commissioner a certified return showing the population of Canada and of each of the provinces and the population of Canada by electoral districts as ascertained by the 1961 Census. The Representation Commissioner calculated the number of members of the House of Commons to be assigned to each of the provinces subject and according to the provisions of Section 51 of the BNA Act, 1867 as amended, and the rules provided therein. He then caused a statement to be published in the *Canada Gazette* of November 28, 1964, setting forth the following results:

Eighty-eight members of the House of Commons shall be elected for the Province of Ontario, seventy-four for the Province of Quebec, eleven for the Province of Nova Scotia, ten for the Province of New Brunswick, thirteen for the Province of Manitoba, twenty-three for the Province of British Columbia, four for the Province of Prince Edward Island, thirteen for the Province of Saskatchewan, nineteen for the Province of Alberta and seven for the Province of Newfoundland.

By proclamation published in the *Canada Gazette*, the Governor General established an Electoral Boundaries Commission for each province charged with preparing, with all reasonable dispatch, a report setting forth its recommendations concerning the division of its particular province into electoral districts and the recommendations concerning the description of the boundaries of each such district and the representation and name to be given thereto. A copy of the 1961 Census return was sent to the chairman of each Commission immediately after its members were appointed.

As provided for in Section 8 of the Representation Commissioner Act, maps were prepared showing the distribution of population in each province and setting out alternative proposals respecting the boundaries of electoral districts in each province; these maps were then supplied to the respective Commissions. The Commissions completed their reports

within the one-year time limit prescribed by the Electoral Boundaries Act. Two certified copies of each report were received by the Representation Commissioner; as required by Section 19(1) of that Act, one of these copies was sent to the Speaker of the House of Commons, who in turn laid it before the House.

A 30-day period followed in which objections in writing, signed by no fewer than ten members of the House of Commons, could be filed with the Speaker specifying the provisions of the report objected to and the reasons for the objection. A further period of 15 days was set aside in which the House of Commons was to consider the matter of the objections; this period was extended to 45 sitting days by an Act (SC 1966-67, c.2) assented to on February 23, 1966.

Several objections were filed with the Speaker, the motions were taken up and considered and the reports referred to the Representation Commissioner by the Speaker and then to the Commissions. On expiration of a 30-day period, the Commissions returned their reports with or without amendment through the Representation Commissioner to the Speaker. A draft representation order was then prepared by the Representation Commissioner to be transmitted to the Secretary of State. This order specified the number of members of the House of Commons to be elected for each of the provinces as calculated by the Representation Commissioner and, dividing each of the provinces into electoral districts, described the boundaries of each such district and specified the representation and name given thereto, in accordance with the recommendations contained in the reports. The Governor in Council, by proclamation of June 16, 1966, declared the draft representation order to be in force, effective upon the dissolution of the then existing Parliament.

At subsequent elections, according to the representation order set out in the schedule to the proclamation, 88 members of the House of Commons were to be elected for Ontario, 74 for Quebec, 11 for Nova Scotia, ten for New Brunswick, 13 for Manitoba, 23 for British Columbia, four for Prince Edward Island, 13 for Saskatchewan, 19 for Alberta and seven for Newfoundland. In addition, one member each was to be elected for the Yukon Territory and the Northwest Territories, making a total representation of 264 in the House of Commons.

Following the 1971 Census, the Representation Commissioner calculated the number of members of the House of Commons to be assigned to each of the provinces. The results appeared in the *Canada Gazette* of May 13, 1972 as follows:

Ninety-one members of the House of Commons shall be elected for the Province of Ontario, seventy-two for the Province of Quebec, ten for the Province of Nova Scotia, ten for the Province of New Brunswick, twelve for the Province of Manitoba, twenty-six for the Province of British Columbia, four for the Province of Prince Edward Island, twelve for the Province of Saskatchewan, nineteen for the Province of Alberta and six for the Province of Newfoundland.

The Electoral Boundaries Commissions were named in a special edition of the *Canada Gazette* dated June 30, 1972.

At the time of this writing the ten Commissions are preparing the readjustment of federal electoral districts. Each Commission is to complete and forward its report to the Representation Commissioner by July 1, 1973.

The number of representatives of each province elected at each of the 29 general elections since Confederation is given in Table 4.3.

Salaries, allowances and pensions. Members of the Senate and House of Commons receive a sessional allowance at the rate of \$18,000 per annum. In addition, for each session of Parliament, they may be paid such travelling expenses between their place of residence or constituency and Ottawa as may be required for the performance of their duties. Senators receive an annual expense allowance of \$4,000 and members of the House of Commons receive an expense allowance of \$8,000 to \$9,650 dependent upon the electoral district represented; neither is subject to income tax and is payable quarterly. The member of the Senate occupying the recognized position as Leader of the Government in the Senate is paid, in addition to his sessional allowance, an annual allowance of \$10,000 and the member of the Senate occupying the recognized position as Opposition Leader in the Senate is paid, in addition to his sessional allowance, an annual allowance of \$6,000; but if the Leader of the Government is in receipt of a salary under the Salaries Act the annual allowance is not paid. The remuneration of the Prime Minister is \$25,000 a year and of a Cabinet Minister and the Leader of the Opposition in the House of Commons \$15,000 a year in addition to the sessional and expense allowances each receives as a member of Parliament. A Minister without portfolio is paid \$7,500 a year in addition to the sessional and expense allowances; the latter is

not taxable. The Chief Government Whip, the Chief Opposition Whip and each leader of a party having a recognized membership of 12 or more in the House of Commons, other than the Prime Minister and the Leader of the Opposition, receives an annual allowance of \$4,000 in addition to the above-noted sessional allowance. The Speaker of the Senate and the Speaker of the House of Commons each receives, in addition to sessional and expense allowances, a salary of \$9,000 per annum. The Deputy Speaker of the House of Commons receives a salary of \$6,000 per annum. The Speakers of the Senate and of the House of Commons are also entitled to \$3,000 in lieu of residence and the Deputy Speaker of the House of Commons an allowance of \$1,500 in lieu of residence; these allowances are not taxable. The Deputy Chairman of Committees receives an annual allowance of \$4,000. Parliamentary secretaries to Ministers of the Crown receive an annual allowance of \$4,000 a year, in addition to their sessional and expense allowances. A motor vehicle allowance of \$2,000 is paid to each Minister of the Crown and to the recognized Leader of the Opposition in the House of Commons, and a motor vehicle allowance of \$1,000 is paid to the Speakers of the Senate and of the House of Commons; these allowances are not taxable.

A member of Parliament contributes, by reservation, 7.5% of his sessional indemnity toward his retirement allowance, which is based on the average of the sessional indemnity received over the best consecutive six years of his pensionable service accumulated as follows: 3.5% of this six-year average for each of the first ten years of pensionable service; 3% of this average for each of the next ten years; 2% of this average for each of the next five years; and 2% of this average for each of the years of pensionable service earned by his contributions from salary for extra duties performed as a Minister, etc.; subject to an over-all maximum of 75% of that best six-year average. Survivor's benefits are as follows: 60% of the member's pension entitlement to the widow or widower; if there is a surviving parent, 10% of the member's pension entitlement for each child up to three; and if there is no surviving parent, 20% of the member's pension entitlement for each child up to four. A member who was a member on March 31, 1970 had a year in which to elect to come under the plan described here or to remain under a previous plan, described in the *1969 Canada Year Book*, p. 75.

An Act to make provision for the retirement of members of the Senate (SC 1965, c.4) entitles a senator appointed after June 2, 1965 to become a contributor under the provisions of the Members of Parliament Retiring Allowances Act. Senators appointed prior to that date and who have not attained the age of 75 years, who elect under the provisions of this Act, are also entitled to become contributors. Under the provisions of the Retirement Act, as amended, a senator contributes, by reservation, 6% of \$12,000. A senator appointed before June 2, 1965 who (a) within one year of attaining the age of 75 years resigns his place in the Senate, or (b) resigns due to some permanent infirmity disabling him from performing his duties in the Senate, may be granted an annuity equal to \$8,000. The widow of a person granted such an annuity may receive an annuity equal to three fifths of the annuity to the ex-member of the Senate.

Every former Prime Minister who held office for four years will receive from the Consolidated Revenue Fund an allowance of two thirds of the annual salary provided for Prime Ministers under the Salaries Act, the allowance to commence when a Prime Minister ceases to hold that or any other office in Parliament, or attains the age of 70 years, whichever is the later, and to continue during his lifetime. The widow of a Prime Minister will receive an annual payment of one third of the allowance that was being paid or that would have been paid in the event that he died before receiving the allowance, such allowance to commence immediately after the death of her husband and to continue during her natural life or until her remarriage.

None of these allowances is payable while the recipient remains a senator or a member of the House of Commons.

The federal franchise. The present federal franchise laws are contained in the Canada Elections Act (RSC 1970, c.14, 1st Supp.). Generally, the franchise is conferred upon all Canadian citizens who have attained the age of 18 years and are ordinarily resident in the electoral district on the date fixed for the beginning of the enumeration at the election. British subjects, other than Canadian citizens, who were qualified as electors on June 25, 1968 and have not, since that date, ceased to be ordinarily resident in Canada, are also qualified as electors. This privilege granted to a restricted group of British subjects will terminate at

midnight on June 26, 1975. Persons denied the right to vote are: the Chief Electoral Officer and the Assistant Chief Electoral Officer; judges appointed by the Governor in Council; the returning officer for each electoral district; persons undergoing punishment as inmates of any penal institution; persons restrained of their liberty of movement or deprived of the management of their property by reason of mental disease; and persons disqualified under any law relating to the disqualification of electors for corrupt or illegal practices.

Prior to July 1, 1960, the list of persons denied the right to vote included "Indians ordinarily resident on an Indian reserve who were not members of His Majesty's Forces in World Wars I or II or who did not execute a waiver of exemption under the Indian Act from taxation on and in respect of personal property". Legislation proclaimed on that date grants all Indians the same rights with respect to the franchise as those enjoyed by other Canadian citizens, without taking from them any of the rights and privileges to which they are entitled under the Indian Act. Eskimos are qualified as electors for the purpose of federal elections, and that right is being increasingly exercised in the communities of the North as electoral districts are established and polling facilities become available.

The Special Voting Rules set out in Schedule II to the Canada Elections Act prescribe voting procedures for members of the Canadian Forces, for members of the Public Service posted abroad, and also for veterans in receipt of treatment or domiciliary care in certain institutions.

Electoral districts, voters on list, votes polled and names and addresses of members of the House of Commons elected at the twenty-ninth general election, October 30, 1972 are given in Table 4.4. Table 4.5 indicates voters on the lists and votes polled at federal general elections in 1963, 1965, 1968 and 1972.

4.1.3 The Judiciary

The Parliament of Canada is empowered by Section 101 of the British North America Act to provide for the constitution, maintenance and organization of a general Court of Appeal for Canada and for the establishment of any additional courts for the better administration of the laws of Canada. Under this provision Parliament has established the Supreme Court of Canada, the Federal Court of Canada and certain miscellaneous courts. A detailed discussion of the judiciary and legal system of Canada is presented in Chapter 3.

4.2 Federal government administration

4.2.1 Financial administration and control

The financial affairs of the Government of Canada are administered and controlled under the basic principle that no tax shall be imposed and no money spent without the authority of Parliament and that expenditures shall be made only for the purposes authorized by Parliament. The most important constitutional provisions relating to Parliament's control of finances are contained in the British North America (BNA) Act which provides that all federal taxing and appropriating measures must originate in the House of Commons. All requests for grants must come from the Crown through a responsible Minister and the government is solely responsible for such requests. In practice, financial control is exercised through a budgetary system based on the principle that all the financial needs of the government for each fiscal year should be considered at one time so that both the current and prospective conditions of the public treasury may be clearly evident.

Estimates and appropriations. Co-ordination of the estimates process is carried out by Treasury Board. The Secretariat to this Board is a separate department of government, its Minister having the designation of President of the Treasury Board. In addition to the President, the Board consists of the Minister of Finance and four other Privy Councillors. Under the Financial Administration Act, the Board may act for the Privy Council in all matters relating to financial management (including estimates, expenditures, financial commitments, establishments, revenues and accounts), terms and conditions of employment of persons in the Public Service and general administrative policy in the Public Service.

Under present practice departments submit forecasts of their requirements for the next fiscal year many months in advance and in two stages. In the first stage, which starts about 13 months before the beginning of a new fiscal year, departments present forecasts of what they will require in each of the coming three years to maintain the current levels of service in each program. These are termed "A Budgets". At the same time they submit forecasts of

requirements for new activities or expansion in existing activities — “B Budgets”. These proposals are reviewed by Treasury Board in the light of expenditure guidelines approved by the Cabinet which express the government’s current priorities. Treasury Board prepares recommendations for the budgetary and non-budgetary allocations to each program for Cabinet review. In August of the year preceding the fiscal year, departments are advised of the allocations approved by Cabinet. Departments then develop detailed estimates of their resource requirements for the new year against these approved allocations. These estimates are submitted at the end of October. Following review by Treasury Board and approval by Cabinet they are tabled in Parliament in February.

Main estimates and supplementary estimates are referred to committees of the House of Commons. The timing of such referrals, the timing of committee reports and all other matters having to do with the business of supply in the House of Commons are regulated by the Standing Orders of the House (October 1969). The relevant provisions are briefly summarized here. Section 58 of the Standing Orders establishes three supply periods ending, respectively, not later than December 10, March 26 and June 30. The first supplementary estimates for a year are usually dealt with in the December 10 period and the final supplementary estimates in the March 26 period. In addition, interim supply (consisting of 3/12ths for all items in estimates and extra 12ths for some items) is dealt with in the March 26 period. In the June 30 period, the House is asked to provide full supply. The Standing Orders call for the referral of the new year main estimates to standing committees of the House by March 1 of the then expiring fiscal year and they must report back to the House not later than May 31 in the then current fiscal year. Supplementary estimates are referred immediately after they are tabled, usually to the Miscellaneous Estimates Committee of the House, and dates by which reports must be made to the House are stipulated. In each supply period, a number of days are allotted to the business of supply. Opposition motions have precedence over all government supply motions on allotted days and opportunities to put forward motions of non-confidence in the government are provided. On the last allotted day in each period, at 15 minutes before the ordinary time of adjournment the Speaker interrupts the proceedings then in progress and puts every question necessary to dispose of any business relating to supply. No debate takes place after the Speaker has acted in this way and the Appropriation Acts then before the House have to be voted on. These Appropriation Acts authorize payments out of the Consolidated Revenue Fund of the amounts included in the estimates, whether main or supplementary, subject to the conditions stated in them.

In addition to the expenditure items included in the annual Appropriation Acts, there are a number of items, such as interest on the public debt and family allowances, authorized under other statutes. Although it is not necessary for Parliament to approve these items annually, they are included in the main estimates for purposes of information. Statutory provision also exists for the expenditure of public money in emergencies where no parliamentary appropriation is available. Under the Financial Administration Act, the Governor in Council, on the report of the President of the Treasury Board that there is no appropriation for the expenditure and on the report of the appropriate Minister that the expenditure is urgently required, may order a special warrant issued authorizing disbursement of the amount required. Such warrants may be issued only when Parliament is not in session and every warrant must be published in the *Canada Gazette* within 30 days of issue and reported to Parliament within 15 days of assembly. The Fire Losses Replacement Account Act also provides for emergency expenditures for the urgent repair or replacement of property destroyed or damaged by fire, where there is not sufficient money available in the appropriation for the service suffering loss. Such amounts must be charged subsequently to an appropriation or included in the estimates for the department or agency concerned and refunded to the Fire Losses Replacement Account.

In addition, disbursements are made for purposes not reflected in the budgetary accounts but recorded in the government’s statement of assets and liabilities, such as loans to and investments in Crown corporations, loans to international organizations and to national, provincial and municipal governments, and loans to veterans. There are also disbursements in connection with deposit and trust accounts and annuity, insurance and pension accounts which the government holds or administers, including the old age security fund and the Canada Pension Plan fund which are operated as separate entities. These disbursements are excluded from the calculation of the annual budgetary surplus or deficit.

The budget. The Minister of Finance usually presents his annual budget speech in the House of Commons some time after the main estimates have been introduced. Budget papers, tabled for the information of Parliament at least one day prior to the presentation of the budget, include a general review of economic conditions and a preliminary review of the government's accounts for the fiscal year then ending. The budget speech itself reviews the state of the national economy and the financial operations of the government for the previous fiscal year and gives a forecast of the probable financial requirements for the year ahead, taking into account the main estimates and making allowances for supplementary estimates. At the close of his address, the Minister tables the formal resolutions for changes in the existing tax rates and customs tariff which, in accordance with parliamentary procedure, must precede the introduction of any money Bills. These resolutions give notice of the amendments which the government intends to ask Parliament to make in the taxation statutes. However, if a change is proposed in a commodity tax, such as a sales tax or excise duty on a particular item, it is usually made effective immediately; the legislation, when passed, is made retroactive to the date of the speech.

The budget speech is delivered in support of a motion that the House go into committee; debate on this motion may take up six sitting days, but once it is passed the way is clear for consideration of the budget resolutions. When these have been approved by the committee, a report to this effect is made to the House, and the tax Bills are introduced and dealt with in the same manner as all other government financial legislation.

Revenues and expenditures. Administrative procedures governing revenues and expenditures are, for the most part, contained in the Financial Administration Act.

With respect to revenues, the basic requirement is that all public money shall be paid into the Consolidated Revenue Fund, which is defined as the aggregate of all public money on deposit to the credit of the Receiver General. The Minister of Supply and Services is the Receiver General for Canada. Treasury Board has prescribed detailed regulations governing the receipt and deposit of such money. The Bank of Canada and the chartered banks are the custodians of public money. Balances are apportioned among the various chartered banks according to a percentage allocation established by agreement among all the banks and communicated to the Department of Finance by the Canadian Bankers' Association. The daily operating account is maintained with the Bank of Canada and the division of funds between it and the chartered banks takes into account the immediate cash requirements of the government and consideration of monetary policy. The Minister of Finance may purchase and hold securities of, or guaranteed by, Canada and pay for them out of the Consolidated Revenue Fund or may sell such securities and pay the proceeds into the Fund. Thus, if cash balances in the Fund exceed immediate requirements they may be invested in interest-earning assets. In addition, the Minister of Finance has established a purchase fund to assist in the orderly retirement of the public debt.

Treasury Board exercises central control over the budgets of departments and over financial administrative matters generally. Although the most important part of this control function is exercised during the annual consideration of departmental long-range plans and of the estimates, the Board has the right to maintain continuous control over certain types of expenditure to ensure that activities and commitments for the future are held within approved policies, that departments follow uniform, efficient and economical practices, and that the government is informed of and approves any major development of policy or significant transaction that might give rise to public or parliamentary criticism.

To ensure enforcement of the decisions of Parliament, the government and Ministers regarding expenditures, the Financial Administration Act provides that no payment shall be made out of the Consolidated Revenue Fund without the authority of Parliament and no charge shall be made against an appropriation except on the requisition of the appropriate Minister or a person authorized by him in writing. These requisitions, which must meet certain standards prescribed by Treasury Board regulation, are presented to the Receiver General, who makes the payment.

At the beginning of each fiscal year, or whenever Treasury Board may direct, each department, unless otherwise directed by the Board, submits a division into allotments of each vote included in its estimates. Once approved, these allotments cannot be varied or amended without the consent of the Board; expenditures charged to appropriations are limited to such allotments. To avoid over-expenditures within a fiscal year, commitments due to be paid

within the year for which Parliament has provided or has been asked to provide appropriations are recorded and controlled by the departments concerned. Commitments made under contract that will fall due in succeeding years are recorded since the government must be prepared in the future to ask Parliament for appropriations to cover them. Any unexpended amounts in the annual appropriations lapse at the end of the year for which they are granted, but for 30 days subsequent to March 31, payments may be made and charged to the previous year's appropriations for work performed, goods received or services rendered prior to the end of that fiscal year.

Under the Financial Administration Act, every payment against an appropriation is made by the Receiver General by cheque or other instrument. After presentation for payment, the cheques or instruments are cleared daily by the chartered banks through the Bank of Canada to the Cheque Redemption Control Division of the Receiver General; the banks are then reimbursed through a cheque drawn on the Receiver General's account with the Bank of Canada.

Public debt. In addition to collecting and disbursing public money for budgetary and non-budgetary purposes, the government receives and pays out substantial sums in connection with its public debt operations. The Minister of Finance is authorized to borrow money by the issue and sale of securities at whatever rate of interest and under whatever terms and conditions the Governor in Council approves. Although new borrowings require specific authority of Parliament, the Financial Administration Act authorizes the Governor in Council to approve borrowings as required to redeem maturing or called securities. To ensure that the Consolidated Revenue Fund will be sufficient to meet lawfully authorized disbursements, he may also approve the temporary borrowing of such sums as are necessary for periods not exceeding six months. The Bank of Canada acts as the fiscal agent of the government in the management of the public debt.

Accounts and financial statements. Under the Financial Administration Act, Treasury Board may prescribe the manner and form in which the accounts of Canada and the accounts of individual departments shall be kept. Annually, on or before December 31 or, if Parliament is not then sitting, within any of the first 15 days after Parliament resumes, the *Public accounts*, prepared by the Receiver General, is laid before the House of Commons by the Minister of Finance. The *Public accounts* contains a survey of the financial transactions of the fiscal year ended the previous March 31 and statements of revenues and expenditures and of assets and direct and contingent liabilities, together with other accounts and information required to show the financial transactions and financial position of Canada or which are required by law to be reported in the *Public accounts*. The statement of assets and liabilities included in the *Public accounts* is designed to disclose the amount of the net debt, which is determined by offsetting against the gross liabilities only those assets regarded as readily realizable or interest- or revenue-producing. Fixed capital assets, such as government buildings and public works, are charged to budgetary expenditures at the time of acquisition or construction and are shown on the statement of assets and liabilities at a nominal value of \$1. Monthly financial statements are also published in the *Canada Gazette*.

The Auditor General. The government's accounts are subject to an independent examination by the Auditor General who is an officer of Parliament. With respect to expenditures, this examination is a post-audit to report whether the accounts have been properly kept, the money spent for the purposes for which it was appropriated by Parliament and the expenditures made as authorized; any audit before payment is the responsibility of the requisitioning department or agency. With respect to revenues, the Auditor General must ascertain that all public money is fully accounted for and that the rules and procedures applied ensure an effective check on the assessment, collection and proper allocation of the revenue. With respect to public property, he must satisfy himself that essential records are maintained and that the rules and procedures applied are sufficient to safeguard and control it. The Auditor General reports the results of his examination to Parliament, calling attention to any case which he considers should be brought to the notice of the House. He also reports to Ministers, the Treasury Board or the government any matter which in his opinion calls for attention so that remedial action may be taken promptly. It is the usual practice to refer the *Public accounts* and the *Auditor General's report* to the House of Commons Standing Committee on Public Accounts, which may review them and report the findings and recommendations to the House of Commons.

4.2.2 Government employment

Treasury Board (a statutory committee of Cabinet) has over-all responsibility for personnel management in the federal Public Service. In this role it is responsible for development and application of personnel policies, systems and methods to ensure that the human resources needed to carry out programs effectively are obtained at competitive prices and used efficiently with due regard for the individual and collective rights of employees.

The Public Service Commission (an independent agency responsible directly to Parliament) ensures that staffing requirements of departments and agencies are met in accordance with the merit principle, operates staff development and training programs, including language training, and establishes appeal boards as provided for in the Public Service Employment Act.

Treasury Board. Under provisions of the amended Financial Administration Act and the Public Service Staff Relations Act, both proclaimed on March 13, 1967, Treasury Board is responsible for the development of policy guidelines, regulations, standards and programs in the areas of classification and pay, conditions of employment, collective bargaining and staff relations, bilingualism, manpower training, development and utilization, pensions, insurance and other employee benefits.

It is concerned with the development, implementation, maintenance and evaluation of policy guidelines, programs and procedures for the accurate determination, allocation, development and efficient utilization of employees needed in the Public Service to carry out programs effectively. The aim of these measures is to improve the effective use of manpower resources in the Public Service and to this end Treasury Board makes recommendations on organization development, manpower planning, the determination and evaluation of training needs and educational programs, and advises departments and agencies on the design and implementation of systems to improve manpower management.

Treasury Board also develops policy guidelines, programs and regulations on salary administration, benefits and allowances for the Public Service. These functions involve the development and maintenance of classification programs and the associated salary structures. Through delegation, responsibility for classification and the administration of salaries is being transferred progressively to departments, subject to a monitoring process. Benefit programs and allowance policies approved by the Board are designed to give maximum responsibility for administration to departments.

Under the system of collective bargaining established by the Public Service Staff Relations Act, Treasury Board is the employer for all employees in the Public Service, except for certain separate employers such as the National Research Council, the Defence Research Board and the National Film Board. The Board negotiates collective agreements with the unions representing 80 bargaining units and advises departments on their administration. Consultations are held with representatives of bargaining agents, directly or through the National Joint Council, on matters which are not subject to bargaining or which have wide application in the Public Service. The Board determines terms and conditions of employment of employees excluded from collective bargaining, and develops policy guidelines and standards to govern physical working conditions and occupational health and safety. It prepares and presents the employer's position on grievances referred to adjudication, and advises or assists departmental management at preceding stages in the grievance process. The Board presents the position of the employer in applications for certification by employee organizations and in hearings before the Public Service Staff Relations Board on applications for the exclusion of employees from bargaining units.

The Board develops policy guidelines, co-ordinates the administration and recommends periodic revision of pension, insurance, and sick-leave programs for the Public Service, and negotiates reciprocal pension transfer agreements with other public and private employers. It also studies and proposes means of ensuring compatibility between Public Service employee benefits and social security programs such as medicare and the Canada and Quebec Pension Plans.

Treasury Board has the over-all responsibility for developing policy guidelines on the implementation of bilingualism objectives within the Public Service, and for seeing that activities by government departments and agencies in this area are consistent with stated policy. The Board also issues guidelines to departments to help them identify bilingual

positions within their organizations and to prescribe the linguistic requirements of all other positions.

Public Service Commission. The Public Service Employment Act, which became effective on March 13, 1967, continues the status of the Public Service Commission as an independent agency responsible to Parliament. The Commission has the exclusive right and authority to make appointments to and from within the Public Service. The Commission is also empowered to operate staff development and training programs, to assist Deputy Heads in carrying out training and development and in 1972 was charged with investigations into cases of alleged discrimination on grounds of sex, race, national origin, colour or religion in the application and operation of the Public Service Employment Act.

It may establish boards to render decisions on appeals against appointments made from within the Public Service and against release or demotion for incompetence or incapacity, to make recommendations on the revocation of appointments improperly made under delegated authority and to render decisions on allegations of political partisanship.

The Commission grants or withholds approval of applications for leave of absence from public servants who wish to be candidates in federal or provincial elections and conducts investigations into allegations of improper political activities on the part of public servants.

The Act authorizes the Commission to delegate to Deputy Heads any of its powers, except those relating to appeals and inquiries. The Commission has delegated its powers to make appointments in the Operational and Administrative Support Categories; employing departments are required to use the Canada Manpower Centres as their recruitment agency for appointments from outside the Public Service. Delegations of appointing authority in the Administrative and Foreign Service, Technical, and Scientific and Professional categories have been made on a restricted basis. The Commission operates a monitoring program designed to ensure that appointments made under delegated authority comply with the law and with Commission policies.

The Public Service Commission performs its important role as guardian of the merit principle to ensure that high standards of quality are maintained within the Service, consistent with adequate representation of the two official language groups, a bilingual capability to the extent prescribed by the government, equal employment and career development opportunities irrespective of sex, race, national origin, colour or religion, and encouragement of opportunities for disadvantaged people.

Every citizen may apply for positions. Competitive examinations are announced through the news media and posters displayed on public notice boards of major post offices, Canada Manpower Centres, Public Service Commission offices and elsewhere.

The Commission's major task — staffing the Public Service according to merit — is done on an occupational basis. The classification system divides the Service into six broad occupational categories which are further divided into groups of occupationally similar jobs. For each major occupation or group of occupations there is a program of recruitment, selection and placement. Comprehensive manpower planning, developed in co-operation with Treasury Board and employing departments, has been introduced for several occupational groups. Continuous recruitment techniques, utilizing candidate inventories, have been developed and are utilized when appropriate. Appointments are made from within the Service except where the Commission believes it is in the best interests of the Service to do otherwise. Appointments from within the Service are made either through a formal competition or from an employee inventory. "Data Stream", the Commission's computerized manpower inventory, is the primary employee inventory for the Executive, Scientific and Professional, Technical and the Administrative and Foreign Service categories. Under the Public Service Employment Act, public servants who are candidates in a competition open to all or part of the Service may appeal the selections made as a result of the competition to the Public Service Commission.

When a promotion is made without competition, those who would have been eligible to apply if a competition had been held may appeal. Public servants may also appeal the decision of a Deputy Head to recommend release or demotion because of incompetence or incapacity.

Consistent with the growing emphasis on managerial development and continuing education, the Public Service Commission offers interdepartmental courses in government administration, occupational training and management improvement. The Commission acts as the consultant and adviser to Deputy Heads on training matters and the training and

development facilities of the Commission are available to employees to train them for specific occupations or for promotion within the administrative and managerial ranks.

In order that departments may perform their functions effectively and serve the public in accordance with the Official Languages Act, the Commission ensures that employees appointed are qualified in the knowledge and use of English or French or both. The Commission exercises specific responsibilities in the areas of language training, research and the development of selection standards with regard to the linguistic requirements of positions and groups of positions within the federal Public Service. It must establish the method of assessing language knowledge and it must also establish the degree of language knowledge or proficiency possessed by candidates for positions.

The formulation of appropriate selection standards is to be determined in accordance with the decisions of the individual Deputy Heads with respect to the linguistic requirements of positions and groups of positions.

4.2.3 Immigration

The principal objective of Canada's immigration policy is to stimulate growth by admitting immigrants who can contribute to the economic, social and cultural development of this country. At the same time this policy recognizes the right of Canadian residents to facilitate the admission of their relatives and it also provides for participation in programs designed to assist refugees. Canada, as a major immigration country, has been deeply involved in refugee resettlement. More than 300,000 have been admitted since the end of World War II.

The Immigration Regulations introduced in October 1967 provide for admission of immigrants on the basis of either the individual's personal qualifications or his relationship to a Canadian resident, or a combination of both. The selection criteria, applied universally and without reference to the race, colour or geographic origin of applicants, are dictated not only by the attributes generally required for adapting to a new country but by the particular requirements for successful establishment in Canada's technological, industrial and urban society. Hence all applicants seeking to qualify on the basis of their own abilities are assessed on nine relevant factors: age; personal qualities such as motivation and adaptability; education and training; knowledge of English or French; occupational skill; current demand for their occupational skills in Canada; general employment prospects in the area in which they wish to reside; availability of pre-arranged employment; and presence of a relative willing to assist in their establishment.

A major feature of the 1967 Regulations is that they strike a balance between the needs of the Canadian economy and the need to follow a humanitarian policy with regard to the immigrant already in Canada and his family overseas. The Regulations also make a clear distinction between dependent relatives and relatives entering the working force. There are three categories of immigrants: sponsored dependants, nominated relatives (i.e., non-dependent relatives) and independent applicants who are neither sponsored nor nominated but who apply on their own merits. For nominated relatives, the selection criteria are appropriately modified if their successful establishment is reasonably assured by their own qualifications in conjunction with the assistance available from their nominators in Canada. Dependants joining their families in Canada are not subject to the assessment criteria; they are admitted subject only to the requirements that their admission not be to the detriment of public health or order.

The Canada Immigration Division of the Department of Manpower and Immigration administers the Immigration Act and Regulations. The Division has three main branches. The Programs and Procedures Branch is responsible for long- and short-range planning of immigration policies, co-ordination of immigration policies developed internally, functional support in respect of the transportation and initial reception of immigrants in Canada and liaison with transportation companies. The Home Services Branch is responsible for the disposition of difficult individual immigration cases, the provision of procedural guidance to field officers, the formulation of policies and guidelines on the enforcement aspects of immigration operations, and the provision of technical advice on procedures relating to the admission of immigrants and non-immigrants. The Foreign Branch is responsible for the management of the Overseas Service, uniform application of selection standards, promotional activities and implementation of approved programs abroad and the proper counselling and direction of immigrants.

There are 50 Manpower and Immigration offices located outside Canada at: Athens, Atlanta, Beirut, Belfast, Belgrade, Berne, Birmingham, Bordeaux, Boston, Brussels, Budapest, Buenos Aires, Buffalo, Cairo, Cologne, Copenhagen, Chicago, Dallas, Detroit, Dublin, Glasgow, Hamburg, Hong Kong, Islamabad, Kingston, Lisbon, London, Los Angeles, Madrid, Manchester, Manila, Marseille, Milan, Minneapolis, Nairobi, New Delhi, New Orleans, New York, Paris, Port of Spain, Rome, San Francisco, Seattle, Stockholm, Stuttgart, Sydney, Tel Aviv, The Hague, Tokyo and Vienna. Many of these offices have been assigned area responsibilities in countries not serviced by a resident Canadian immigration officer. In order to provide service on a universal basis, visits are made to countries and territories within each designated area as the volume of immigration activity warrants. Because personnel at all posts are kept in touch with economic conditions in Canada, they are able to advise immigrants regarding their prospects of successful establishment in Canada.

Examination of immigrants and visitors is carried out at 547 ports of entry on Canadian coasts, points along the International Boundary and at certain airports and inland offices.

4.2.4 Citizenship

The Canadian Citizenship Act (RSC 1970, c.C-19), which came into force on January 1, 1947 replacing previous Naturalization Acts, created the distinct nationality of a "Canadian citizen" to be recognized throughout the world and it provided a means whereby those non-Canadian British subjects and aliens who were permanently residing in Canada or those who might subsequently immigrate to Canada could apply for Canadian citizenship. The Act also provides for reacquisition of Canadian citizenship by natural-born Canadians. Administration of Canadian citizenship is under the jurisdiction of the Department of the Secretary of State, Citizenship Registration Branch.

Natural-born Canadian citizens. The Act conferred natural-born status on two categories of persons on January 1, 1947: those born in Canada or on a Canadian ship or aircraft and who were not aliens on January 1, 1947; and those born of Canadian fathers outside Canada who were not aliens on January 1, 1947 and were either minors on that date or had already entered Canada for permanent residence.

The Act provides that a person born abroad who was a minor on January 1, 1947 automatically ceased to be a Canadian citizen on his 24th birthday or on January 1, 1954, whichever was later, unless he had his place of domicile in Canada at such date or had, before such date and after reaching the age of 21 years, filed a declaration of retention of Canadian citizenship.

A person born outside Canada after December 31, 1946, whose responsible parent is considered a Canadian citizen under the terms of the Canadian Citizenship Act, is a Canadian if his birth is registered with the Registrar of Canadian Citizenship within two years of its occurrence or within such extended period as the Minister may authorize in special cases.

A person who becomes a natural-born Canadian citizen in this manner will automatically cease to be a Canadian citizen if he fails to file a declaration of retention prior to his 24th birthday or does not have his place of domicile in Canada on that date.

Newfoundland and Canadian citizenship. On April 1, 1949, Newfoundland became the tenth province of Canada and every person born therein or naturalized or every British subject who had domicile in Newfoundland on that date or every woman who married a citizen of Newfoundland and took up residence there before April 1, 1949 became a Canadian citizen. They acquired the right of conferring Canadian citizenship by descent on their children born outside Newfoundland in the same manner as those who had previously become Canadians. Persons born outside Newfoundland to Newfoundland parents are natural-born Canadian citizens provided they were either minors on April 1, 1949 or had before that date been lawfully admitted to Canada or Newfoundland for permanent residence. However, a person who was a minor on April 1, 1949, ceased to be a Canadian on his 24th birthday or on July 1, 1968, whichever was later, unless he had his place of domicile in Canada at that date or had filed a declaration of retention of Canadian citizenship after reaching the age of 21 years. A person born outside Canada to Newfoundland parents after March 31, 1949 is a natural-born Canadian if his birth is registered with the Registrar of Canadian Citizenship within two years of its occurrence or within such extended period as the Minister may authorize in special cases. A person who becomes a natural-born Canadian in this manner will automatically cease to be

a Canadian citizen if he fails to file a declaration of retention prior to his 24th birthday or does not have his place of domicile in Canada on that date.

Canadian citizens other than natural-born. Before the 1953 amendments to the Citizenship Act, the only persons who acquired Canadian citizenship on January 1, 1947 through the transitional clauses of Section 9 were persons naturalized in Canada before that date. British subjects who had Canadian domicile at the commencement of the Act and women lawfully admitted to Canada and married prior to January 1, 1947 whose husbands would have qualified as Canadian citizens if the Act had come into force before the date of marriage. Section 9 was amended on June 1, 1953, so that a British subject domiciled in Canada for at least 20 years immediately before January 1, 1947 need not comply with the requirements of Canadian domicile provided he was not under an order of deportation on January 1, 1947.

Acquisition of Canadian citizenship by aliens or British subjects. An adult non-Canadian British subject or an alien who wishes to become a Canadian must formally file an application for citizenship. The non-Canadian British subject may file an application direct with the Registrar of Canadian Citizenship, whereas an alien must file an application through his local court, or through one of the special citizenship courts now established or, if he lives more than 50 miles from a court, he may mail his application to the Registrar of Canadian Citizenship in Ottawa, who will file it with the appropriate court.

After the application has been posted for three months, he is called to appear before the court for examination. In either case the same requirements apply: (1) He must have resided in Canada for 12 of the 18 months immediately preceding the date of his application. (2) He must have been lawfully admitted to Canada for permanent residence and either have acquired Canadian domicile before July 7, 1967, or have resided in Canada for five of the eight years immediately preceding the filing of his application. (Persons living in Canada before obtaining landed-immigrant status may count half of each full year before landing toward the residence qualification. The wife of a Canadian needs only to be admitted for permanent residence and reside in Canada for one year.) (3) He must be of good character and not under an order of deportation. (4) He must have an adequate knowledge of either English or French or, alternatively, be the spouse, widow or widower of a Canadian or, either be 40 or more years of age at the time of lawful admission and have resided in Canada for more than ten years or be less than 40 at the time of admission and have resided continuously in Canada for more than 20 years. (5) He must have an adequate knowledge of the responsibilities and privileges of citizenship. (6) He must intend to comply with the Oath of Allegiance and to have his place of domicile permanently in Canada.

At the conclusion of the hearing, the decision of the court is forwarded to the Minister responsible for administering the Canadian Citizenship Act. If favourable, a certificate of Canadian Citizenship granted by the Minister is forwarded to the clerk of the court who notifies the applicant when to appear before the court to take the Oath of Allegiance, renounce his previous nationality and receive his certificate. Where a court finds that an applicant does not possess the required qualifications, the Minister will advise the applicant and give him notice that he may appeal the decision within 30 days to the Citizenship Appeal Court which is the Trial Division of the Federal Court of Canada. If a court rejects an application and this decision is upheld by the Citizenship Appeal Court or if an application is refused by the Minister, the applicant has the right to file a new application two years after the date of rejection.

Status of married women. The Canadian Citizenship Act places no disabilities on the married woman. She neither acquires nor does she lose Canadian citizenship by marriage. In order to acquire Canadian citizenship she must apply in exactly the same manner as does a man. The Canadian Citizenship Act enables a woman married to an alien whose nationality she acquired on marriage to divest herself of Canadian citizenship by the filing of a declaration of renunciation; it also provides for her to reacquire her Canadian citizenship on application. Finally, it provides a means whereby a woman, who had become an alien through marriage prior to January 1, 1947, may acquire the Canadian status she would otherwise have assumed on that date.

Status of minor children. Alien and British subject minor children do not automatically become Canadians with their parents. After one parent has become a Canadian, the

responsible parent of that child — his mother if she has de facto custody of the child or maintains him — the tutor or the legal guardian of the child may apply for citizenship on the child's behalf. Application is made to the Registrar of Canadian Citizenship, Ottawa. Provision is also made in the Citizenship Act to grant a certificate of citizenship to a minor child in special circumstances.

Loss of Canadian citizenship. Certain circumstances result in loss of citizenship. A Canadian loses his citizenship if when outside Canada and not under disability he acquires by a voluntary and formal act other than marriage the nationality or citizenship of a country other than Canada. This does not apply if the country is at war with Canada at the time of acquisition but in such a case the Minister may order that he cease to be a Canadian citizen. The purpose of this is to hold the person, if deemed necessary, to his obligations as a Canadian. A natural-born Canadian citizen who is a dual national by birth or through naturalization, and any Canadian citizen on marriage, may after attaining the age of 21 cease to be a Canadian citizen by making a declaration of renunciation thereof. A Canadian citizen who under the law of another country is a national or citizen of such country and who serves in the armed forces of such country when it is at war with Canada loses his Canadian citizenship. This does not apply if the Canadian citizen became a national or citizen of such country when it was at war with Canada.

Prior to the 1967 amendments of the Citizenship Act, a person, other than a natural-born Canadian, who since becoming a Canadian had resided outside Canada for ten consecutive years automatically ceased to be a Canadian; this provision for automatic loss has been removed from the Citizenship Act. In addition, before the 1967 amendments, loss of Canadian citizenship by revocation was limited under certain provisions of the Act only to non-natural-born Canadians. This discriminatory distinction between non-natural-born and natural-born Canadians has been removed from the Citizenship Act and the following substituted: Canadian citizenship may be revoked by the Governor in Council if, on a report from the Minister, he is satisfied that any Canadian citizen has, when not under a disability, acquired voluntarily, when in Canada, the citizenship of a foreign country (other than by marriage); taken or made an oath, affirmation or other declaration of allegiance to a foreign country; made a declaration renouncing his Canadian citizenship; or obtained Canadian citizenship by false representation or fraud or by concealment of material circumstances. Where in the opinion of the Minister a doubt exists as to whether a person has ceased to be a Canadian citizen, the Minister may refer the question to the commission referred to in the Citizenship Act for a ruling and the decision of the commission or the court, as the case may be, shall be final.

Citizenship statistics. Citizenship certificates are "issued" for various reasons to persons who are already Canadian citizens; certificates are "granted" to those who become Canadian citizens by the grant of such certificates. In 1971, 99,188 certificates were issued and 63,668 were granted. Of the latter, 21,038 went to British subjects and 42,630 to aliens.

The decennial census of Canada requires that each person state the country to which he owed allegiance and had citizenship rights as of June 1 of the census year. According to the 1971 Census, only 6% of the Canadian population on June 1, 1971 reported a country of citizenship other than Canada.

4.2.5 Native peoples

4.2.5.1 Indians

The federal Department of Indian Affairs and Northern Development is responsible for the 257,619 Indians registered with the Department under the Indian Act. The role of the federal government in administering Indian affairs is changing as the native people become involved in managing their own affairs, as Indian representatives and government confer before major policy decisions are taken, and as band councils plan activities and distribute funds available under the Indian Affairs program.

Community development. The Department's Community Affairs Branch assists with the physical development of Indian communities, which involves planning, housing, water, sanitation, electrification and construction and maintenance of roads on reserves. Indian participation in these activities as well as in services such as school maintenance, fire and police protection and local government is increasing as the concept of band management is extended.

Under agreements with the federal government, Indian associations receive the funds appropriated for local administration and operate needed community services themselves. Since the first such agreement was concluded with the Manitoba Indian Brotherhood in 1969, others have been entered into with Indian associations in Saskatchewan, Nova Scotia, New Brunswick, British Columbia and the Yukon Territory. In 1971-72, 437 bands handled more than \$32 million in program funds.

The federal government administers three housing programs on reserves: subsidy housing, a program of direct subsidy; band-administered housing, a scheme in which band councils are authorized to administer federal appropriations either as the sole source of financing or in conjunction with band funds and Central Mortgage and Housing Corporation (CMHC) loans; and Indian on-reserve housing, a system of CMHC loans to individuals, guaranteed by the Minister and often applied in conjunction with band funds or federal subsidies. Indians employed away from the reserve, wishing to live in non-Indian communities, are eligible for loans from CMHC or approved lenders in conjunction with a program of forgivable mortgage loans from the federal government.

Economic development. The Department, through its Indian-Eskimo Economic Development Branch, works to raise the economic status and increase the independence of individuals and bands by assisting in creation of business and employment opportunities in service and secondary industries and in areas of resource utilization and land development, including the development of mineral resources on Indian reserves. Many of these programs are conducted in co-operation with other federal government departments, provincial governments and private organizations. Assistance is in the form of loans, grants, loan guarantees, technical and management advice, and specialized training. The loans, grants and guarantees are provided from the Indian Economic Development Fund, capitalized at \$27.1 million for the year ended March 31, 1973. In addition, the Branch has 1972-73 appropriations totalling \$15.8 million to be used for the encouragement of economic activity through the provision of basic infrastructure and professional and technical services. The Branch also administers the Indian reserves and surrendered lands as well as certain categories of Indian estates.

Social services. Indians are eligible for benefits from a number of welfare programs which are administered by different levels of government, Indian bands and private agencies. Like other Canadians, not all Indians have the same programs available to them, as some programs vary not only between but also within provinces and on and off reserves.

Some Indian bands administer social assistance and child care for persons living on the reserve of the band. The criteria of eligibility and rates of payment for social assistance are based on those of the province in which the band is located. Family allowances, youth allowances, old age security and the guaranteed income supplement are paid to Indians by the Department of National Health and Welfare on the same basis as they are paid to other Canadians.

Indians are eligible for benefits from some, but not all, provincial welfare programs except in the Northwest Territories, where they are eligible for benefits from all territorial welfare programs. Generally speaking, Indians are eligible for benefits under provincial programs for specific categories of persons, such as the blind. Benefits from less specific programs, such as social assistance, are not generally available to Indians living on reserves, although they are in some parts of some provinces.

The federal Department of Indian Affairs and Northern Development provides social assistance, care for children and care for physically handicapped adults for Indians when these are not available from other sources. The criteria of eligibility and the rates used in calculating the amount to which an applicant for social assistance is entitled are based on those of the province in which the person applies for assistance.

Indian consultation and negotiation. In recent years the Department of Indian Affairs and Northern Development has provided consultation funds to finance meetings between departmental officials and Indian associations representing bands, as well as all-chiefs conferences. An increasing number of bands have indicated that they wish to carry out consultations on their own to resolve matters of immediate concern. At the Regional Directors Conference in February 1972 it was agreed that more emphasis should be placed on meetings between regional staff and bands, and less on conferences with associations and between associations and bands.

Financing from the Department of the Secretary of State provides for administrative and functional operations of Indian associations and supports at least one all-chiefs meeting per province each year.

Research and liaison. A Policy Planning and Research Branch of the Department was set up late in 1972 to develop stronger liaison with Indian bands and associations, to carry out research activities for the Indian-Eskimo program and to collect and analyze data on program activities. The Indians have expressed a desire to administer many activities at the band level and still others at the association level. Responsibilities for local administration and for economic and community development are being progressively transferred to the Indians themselves but the transfer presents difficulties that will not be easily or inexpensively overcome. Transfer techniques, financial arrangements, agreements and training programs are being developed and implemented in preparation for a phase-out of federal staff when the Indians are adequately trained. Meanwhile, the Branch must maintain and improve the reasonably effective dialogue that has now been developed with most of the Indian associations.

4.2.5.2 Eskimos

At present the federal Department of Indian Affairs and Northern Development is responsible, either directly or indirectly through the Northwest Territories government, for the 17,000 Eskimo people, or Inuit as they prefer to be called, in the Northwest Territories, Arctic Quebec, Labrador and Manitoba.

In the Northwest Territories, education, welfare, municipal services and most provincial-type functions are administered by the territorial government with federal financial support. In other parts of Canada the Department administers these services. The Northwest Territories Council enacts health ordinances but the federal Department of National Health and Welfare provides all health care services to northern residents. The territorial government operates a health insurance plan and coverage was made available to all residents on April 1, 1971. Most settlements of more than 250 have nursing stations; complicated medical or surgical cases are flown to larger centres.

The federal Northern Housing Program has resulted in the construction of 2,200 modern housing units most often rented fully serviced to the Inuit, but there is a provision for ownership with part of the rent applied to the purchase price. Because the Eskimo tenant associations manage these rental projects, the program is contributing to community development and independence.

Co-operatives, run by the Eskimos themselves with technical assistance from the Department of Indian Affairs and Northern Development, represent a further step toward financial and administrative autonomy. Co-operatives in 27 Eskimo settlements have contributed more than \$5 million to the local economy in wages and salaries, through the marketing of such products as handicrafts, sculpture and Arctic gourmet foods.

4.2.6 Departments, boards, commissions and corporations

In Canada the work of government is conducted by federal departments, special boards, commissions and Crown corporations. During the past quarter-century this last type of organization, the Crown corporation, has been used frequently for administering and managing many public services in which business enterprise and public accountability must be combined. The historical evolution of Crown corporations is described in the *1972 Canada Year Book*, p. 153. Part VIII of the Financial Administration Act (RSC 1970, c.F-10) provides a uniform system of financial and budgetary control and of accounting, auditing and reporting for Crown corporations. In addition, that legislation defines a Crown corporation as a corporation that is ultimately accountable, through a Minister, to Parliament for the conduct of its affairs and establishes three classes of corporation — departmental, agency and proprietary.

Departmental corporations. A departmental corporation is defined as a Crown corporation that is a servant or agent of Her Majesty in right of Canada and is responsible for administrative, supervisory or regulatory services of a governmental nature. The following corporations are classified as departmental corporations in Schedule B to the Financial Administration Act:

Agricultural Stabilization Board

Atomic Energy Control Board
Director of Soldier Settlement
The Director, The Veterans' Land Act
Economic Council of Canada
Fisheries Prices Support Board
Medical Research Council
Municipal Development and Loan Board
National Museums of Canada
National Research Council
Science Council of Canada
Unemployment Insurance Commission.

Agency corporations. An agency corporation is defined as a Crown corporation that is an agent of Her Majesty in right of Canada and is responsible for the management of trading or service operations on a quasi-commercial basis or for the management of procurement, construction or disposal activities on behalf of Her Majesty in right of Canada. The following corporations are classified as agency corporations in Schedule C to the Financial Administration Act:

Atomic Energy of Canada Limited
Canadian Arsenals Limited
Canadian Commercial Corporation
Canadian Dairy Commission
Canadian Film Development Corporation
Canadian Livestock Feed Board
Canadian National (West Indies) Steamships Limited
Canadian Patents and Development Limited
Canadian Saltfish Corporation
Company of Young Canadians
Crown Assets Disposal Corporation
Defence Construction (1951) Limited
National Battlefields Commission
National Capital Commission
National Harbours Board
Northern Canada Power Commission
Royal Canadian Mint
Uranium Canada Limited.

Proprietary corporations. A proprietary corporation is defined as a Crown corporation that is responsible for the management of lending or financial operations, or for the management of commercial or industrial operations involving the production of or dealing in goods and the supplying of services to the public, and is ordinarily required to conduct its operations without parliamentary appropriations. The following corporations are classified as proprietary corporations in Schedule D to the Act:

Air Canada
Canada Deposit Insurance Corporation
Canadian Broadcasting Corporation
Canadian Overseas Telecommunication Corporation
Cape Breton Development Corporation
Central Mortgage and Housing Corporation
Eldorado Aviation Limited
Eldorado Nuclear Limited
Export Development Corporation
Farm Credit Corporation
Freshwater Fish Marketing Corporation
National Railways, as defined in the Canadian National - Canadian Pacific Act (RSC 1952, c.39)
Northern Transportation Company Limited
Pilotage Authorities:
 Atlantic Pilotage Authority
 Laurentian Pilotage Authority
 Great Lakes Pilotage Authority
 Pacific Pilotage Authority
St. Lawrence Seaway Authority
Seaway International Bridge Corporation Limited (formerly Cornwall International Bridge Company Limited).

Departmental corporations are governed by the provisions of the Financial Administration Act that are applicable to departments generally. Agency and proprietary corporations, however, are subject to the provisions of the Crown corporations Part of the Act, although, if there is any inconsistency between its provisions and those of any other Act applicable to a corporation, the Act provides that the latter prevail. The same Part provides for control and regulation of corporation budgets and bank accounts, turning over surplus money to the Receiver General, loans for limited working-capital purposes, awarding of contracts and establishment of reserves, keeping and auditing of accounts, and the preparation of financial statements and reports and their submission to Parliament through the appropriate Minister.

A further form of control is exercised by Parliament through the power to vote financial assistance to a corporation, which may secure financing through parliamentary grants, loans or advances, by the issue of capital stock to the government, or by the sale of bonds to either the government or the public. Several corporations finance all or a portion of their requirements from their own resources or earnings.

Before 1952 Crown corporations did not pay corporate income taxes. However, the Income Tax Act was amended, effective January 1, 1952, to require proprietary Crown corporations to pay taxes on income earned in the same manner as any privately owned corporation. As a result of this amendment it is now possible to make a more realistic comparison of the financial statements of these Crown companies with those of private industry, and thus assess the relative efficiency of their operations. Crown corporations also pay provincial retail sales taxes, gasoline or motor vehicle fuel taxes and motor vehicle fees subject to the terms of the Crown Corporations (Provincial Taxes and Fees) Act of 1964.

Unclassified corporations. The following Crown corporations, because of the special nature of their operations, are not classified in the Financial Administration Act but are governed by their own Acts of incorporation: the Bank of Canada; the Canada Council; the Canadian National Railways Securities Trust; the Canadian Wheat Board; the Industrial Development Bank; and the National Arts Centre Corporation. The only provision of the Financial Administration Act to which they are subject is that governing the appointment of auditors. The Eastern Rockies Forest Conservation Board (a joint federal-provincial corporation) is also governed by its own Act of incorporation.

Other corporations. Some corporations established by the government are not agencies of the Crown. These independent entities are not subject to the provisions of the Financial Administration Act and do not report to Parliament. The Canada Development Corporation, Telesat Canada and Panarctic Oils Ltd. are corporations of this type.

An alphabetical list of federal Ministers and the departments and other agencies for which they report to Parliament follows. Brief descriptions of the functions of these government organizations and related agencies will be found in Appendix 1. The accompanying organization chart illustrates the federal structure to the departmental level. A more detailed chart is available from Information Canada.

Minister of Agriculture

Department of Agriculture
Agricultural Products Board
Agricultural Stabilization Board
Canadian Dairy Commission
Canadian Grain Commission
Canadian Livestock Feed Board
Farm Credit Corporation
National Farm Products Marketing Council

Minister of Communications

Department of Communications
Canadian Overseas Telecommunication Corporation
Canadian Radio-Television Commission

Minister of Consumer and Corporate Affairs

Department of Consumer and Corporate Affairs
Canadian Consumer Council
Copyright Appeal Board
Restrictive Trade Practices Commission

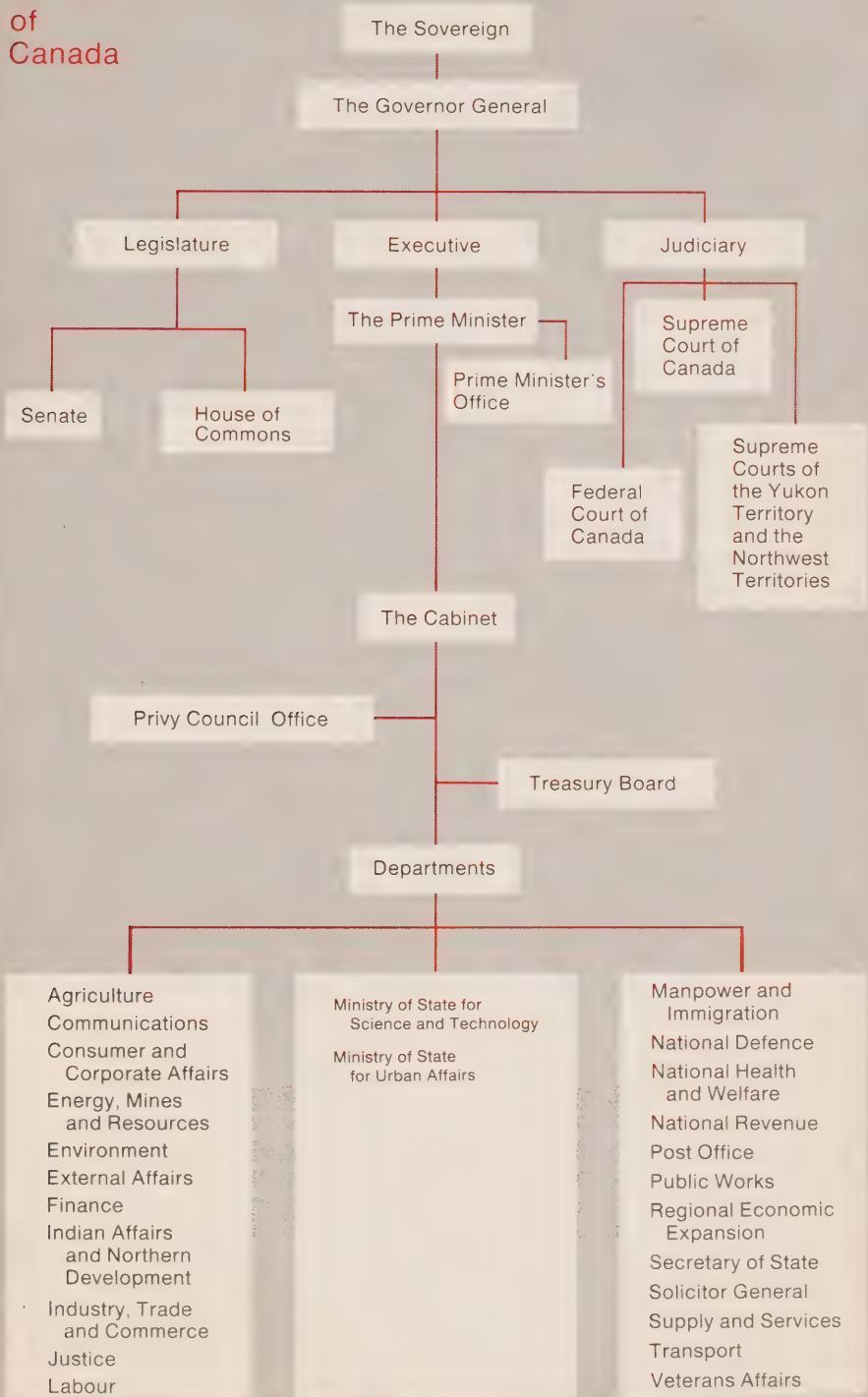
Minister of Energy, Mines and Resources

Department of Energy, Mines and Resources
Atomic Energy of Canada Limited
Atomic Energy Control Board
Board of Examiners for Dominion Land Surveyors
Canadian Permanent Committee on Geographical Names
Columbia River Treaty Permanent Engineering Board
Eldorado Aviation Limited
Eldorado Nuclear Limited
Interprovincial Boundary Commission
National Energy Board
Uranium Canada Limited

Minister of the Environment

Department of the Environment
Canadian Saltfish Corporation
Eastern Rockies Forest Conservation Board
Fisheries Prices Support Board

The Government of Canada



Minister of the Environment (concluded)

Fisheries Research Board of Canada
 Freshwater Fish Marketing Board
 International Fisheries Commission

Secretary of State for External Affairs

Department of External Affairs
 Canadian International Development Agency
 Canadian International Development Board
 Foreign Claims Commission
 International Boundary Commission
 International Development Research Centre
 International Joint Commission
 Roosevelt Campobello International Park
 Commission

Minister of Finance

Department of Finance
 Anti-dumping Tribunal
 Bank of Canada
 Canada Deposit Insurance Corporation
 Department of Insurance
 Halifax Relief Commission
 Industrial Development Bank
 Inspector General of Banks
 Inter-American Development Bank (Canadian
 section)
 Municipal Development and Loan Board
 Tariff Board

Minister of Indian Affairs and Northern Development

Department of Indian Affairs and Northern
 Development
 Commissioner of the Northwest Territories
 Commissioner of the Yukon Territory
 Heritage Canada
 Historic Sites and Monuments Board of Canada
 Indian Claims Commission
 National Battlefields Commission
 Northern Canada Power Commission

Minister of Industry, Trade and Commerce

Department of Industry, Trade and Commerce
 Export Development Corporation
 General Adjustment Assistance Board
 Machinery and Equipment Advisory Board
 National Design Council
 Preparatory Commission for Metric Conversion
 Standards Council of Canada
 Statistics Canada
 Textile and Clothing Board

Minister of Justice and Attorney General of Canada

Department of Justice
 Canadian Wheat Board
 Court Martial Appeal Court
 Grains Group
 Law Reform Commission
 Tax Review Board

Minister of Labour

Department of Labour
 Canada Labour Relations Board
 Information Canada
 Merchant Seamen Compensation Board

Minister of Manpower and Immigration

Department of Manpower and Immigration
 Canada Manpower and Immigration Council
 Immigration Appeal Board
 Unemployment Insurance Commission

Minister of National Defence

Department of National Defence
 Canada Emergency Measures Organization
 Defence Construction (1951) Limited
 Defence Research Board

Minister of National Health and Welfare

Department of National Health and Welfare
 Dominion Council of Health
 Medical Research Council
 National Advisory Council on Fitness and Amateur
 Sport
 National Council of Welfare
 Pension Appeals Board

Minister of National Revenue

Department of National Revenue

Postmaster General

Post Office Department

Minister of Public Works

Department of Public Works
 Dominion Fire Commissioner

Minister of Regional Economic Expansion

Department of Regional Economic Expansion
 Atlantic Development Council
 Canadian Council on Rural Development
 Cape Breton Development Corporation
 New Brunswick Multiplex Corporation
 Prairie Farm Rehabilitation Administration

Minister of State for Science and Technology

Ministry of State for Science and Technology
 Science Council of Canada

Secretary of State of Canada

Department of the Secretary of State
 Bilingual Districts Advisory Board
 Canada Council
 Canadian Broadcasting Corporation
 Canadian Film Development Corporation
 Company of Young Canadians
 National Arts Centre Corporation
 National Film Board
 National Library
 National Museums of Canada
 Public Archives
 Public Service Commission

Solicitor General

Department of the Solicitor General
 Canadian Penitentiary Service
 National Parole Board
 Royal Canadian Mounted Police

Minister of Supply and Services

Department of Supply and Services
 Canadian Arsenals Limited
 Canadian Commercial Corporation
 Canadian Government Specifications Board
 Crown Assets Disposal Corporation
 Office of the Custodian of Enemy Property
 Royal Canadian Mint

Minister of Transport

Ministry of Transport

Air Canada

Blue Water Bridge Authority

Canadian National Railways

Canadian National Railways Securities Trust

Canadian National (West Indies) Steamships Limited

Canadian Transport Commission

National Harbours Board

Northern Transportation Company Limited

Pilotage Authorities

Atlantic Pilotage Authority

Great Lakes Pilotage Authority

Laurentian Pilotage Authority

Pacific Pilotage Authority

St. Lawrence Seaway Authority

Seaway International Bridge Corporation Limited

President of Treasury Board

Canadian Patents and Development Limited

National Research Council

Secretariat of the Interdepartmental Committee on the 1976 Olympic Games

Minister of State for Urban Affairs

Ministry of State for Urban Affairs

Central Mortgage and Housing Corporation

National Capital Commission

Minister of Veterans Affairs

Department of Veterans Affairs

Army Benevolent Fund Board

Bureau of Pensions Advocates

Canadian Pension Commission

Commonwealth War Graves Commission

Director of Soldier Settlement

The Director, The Veterans' Land Act

Pension Review Board

War Veterans Allowance Board

Minister of State

Special responsibility for Multiculturalism

4.3 Provincial and territorial governments**4.3.1 Provincial governments**

In each of the provinces, the Queen is represented by a Lieutenant-Governor appointed by the Governor General in Council. The Lieutenant-Governor acts on the advice and with the assistance of his Ministry or Executive Council which is responsible to the legislature and resigns office under circumstances similar to those described concerning the federal government.

The legislature of each province is unicameral, consisting of the Lieutenant-Governor and a Legislative Assembly. The Legislative Assembly is elected by the people for a statutory term of five years but may be dissolved within that period by the Lieutenant-Governor on the advice of the Premier of the province.

Sections 92, 93 and 95 of the British North America Act, 1867 (Br. Stat. 1867, c.3 and amendments) assign legislative authority in certain areas to the provincial governments (see Chapter 3).

Details regarding qualifications and disqualifications of the franchise are contained in the Elections Act of each province. In general, every person at a specified age (18 to 21 years) who is a Canadian citizen or (in certain provinces) other British subject, who complies with certain residence requirements in the province and the electoral district of polling and who falls under no statutory disqualifications, is entitled to vote. Voting privileges are given to persons in Prince Edward Island, New Brunswick, Quebec, Ontario, Manitoba, Saskatchewan and Alberta at the age of 18 and in Newfoundland, Nova Scotia and British Columbia at 19 years.

4.3.1.1 Newfoundland

The government of Newfoundland has a Lieutenant-Governor, an Executive Council and a House of Assembly, made up of 42 members elected for a term not to exceed five years. Since April 2, 1969 the Lieutenant-Governor has been the Honourable E. John A. Harnum. The Legislature elected March 24, 1972 is the thirty-sixth in the history of Newfoundland and the eighth since Confederation. After a by-election in August 1972, 33 Progressive Conservatives, eight Liberals and one member of the New Labrador party held seats in the House.

The Premier receives a salary of \$22,000 and Cabinet Ministers \$21,000 per annum, plus a sessional indemnity of \$6,666.67 and a travelling and expense allowance of \$3,333.33. Each member of the House of Assembly receives a sessional indemnity of \$6,666.67 plus a travelling and expense allowance of \$3,333.33. The Leader of the Opposition receives an additional allowance of \$11,000.

The second Ministry of Newfoundland as at December 31, 1972

Premier, Hon. F.D. Moores

Minister of Justice and President of the Council.

Hon. Alex T. Hickman

Minister of Finance and President of the Treasury Board, Hon. J.C. Crosbie

Minister of Education, Hon. G. Ottenheimer

Ministry of Newfoundland (concluded)

Minister of Transportation and Communications,
Hon. T. Farrell
Minister of Social Assistance, Hon. A.J. Murphy
Minister of Health, Hon. A.T. Rowe
Minister of Industrial Development, Hon. C.W.
Doody
Minister of Municipal Affairs and Housing, Hon.
H. Collins
Minister of Provincial Affairs and Environment,
Hon. T. Hickey
Minister of Manpower and Industrial Relations,
Hon. G. Dawe

Minister of Agriculture and Forests, Hon. E.
Maynard
Minister of Fisheries, Hon. Roy Cheeseman
Minister of Public Works and Services, Hon. V.
Earle
Minister of Tourism, Hon. T. Doyle
Minister of Rehabilitation and Recreation, Hon. J.
Rousseau
Minister of Mines and Energy, Hon. L. Barry
Minister of Rural Development, Hon. J. Reid
Minister without portfolio, Hon. William Marshall.

4.3.1.2 Prince Edward Island

The government of Prince Edward Island consists of a Lieutenant-Governor, an Executive Council and a Legislative Assembly. The present Lieutenant-Governor is the Honourable J. George MacKay, appointed effective October 6, 1969. The Legislative Assembly has 32 members from 16 electoral districts who may serve for a statutory term not exceeding five years. Each district elects two representatives to the Legislature. The fifty-second Assembly elected May 11, 1970 consisted of 27 Liberals and five Progressive Conservatives; as at December 31, 1972 party standings had changed to 25 Liberals and seven Progressive Conservatives.

A member of the Assembly receives \$4,000 for each regular session attended by him and an additional \$2,000 tax-free, for travelling and other expenses incurred with session attendance and representing his district. In addition, the Premier receives a salary of \$10,000, a Cabinet Minister \$6,000 and a Minister without portfolio \$3,600. The Speaker of the Assembly is paid an additional indemnity of \$1,000 and his tax-free allowance is increased by \$500 for each session; higher sessional indemnities and allowances are also available to the Deputy Speaker in the amounts of \$600 and \$300, respectively, and to the Leader of the Opposition in the amounts of \$2,000 and \$1,000. All indemnities and allowances accrue from the date of election to the legislature and are paid monthly. No sessional indemnity or expenses are paid for any special session of the Legislature.

The twenty-seventh Ministry of Prince Edward Island as at December 31, 1972

Premier and Minister of Agriculture and Forestry,
Hon. Alexander B. Campbell
President of the Executive Council, Minister of
Justice, Attorney and Advocate General
and Provincial Secretary, Hon. Gordon L.
Bennett
Minister of Public Works and Highways, Hon.
George J. Ferguson
Minister of Finance, Hon. T. Earle Hickey
Minister of Industry and Commerce and Minister
of Development, Hon. John H. Maloney
Minister of Health, Minister of Social Services and
Minister of Labour, Hon. Bruce L. Stewart
Minister of the Environment and Tourism, Minister
of Community Services, and Chairman of the
PEI Centennial (1973) Commission, Hon.
Robert Schurman
Minister of Fisheries, Hon. Robert E. Campbell
Minister of Education, Hon. Bennett Campbell
Minister without portfolio and Minister responsible
for the PEI Housing Authority, Hon. Jean
Canfield.

4.3.1.3 Nova Scotia

The government of Nova Scotia consists of a Lieutenant-Governor, an Executive Council and a House of Assembly. Since July 22, 1968 the Honourable Victor deB. Oland has been Lieutenant-Governor. The Legislature has 46 members elected for a maximum term of five years. On October 13, 1970, 23 Liberals, 21 Progressive Conservatives and two New Democrats were elected to the province's fiftieth Legislature and twenty-seventh since Confederation.

The Premier of the province receives a salary of \$18,500 per annum and each Cabinet Minister a salary of \$16,500 per annum. Each member of the House of Assembly is paid a sessional indemnity of \$5,000 and an allowance of \$2,500 for expenses incidental to the discharge of his duties. The Leader of the Opposition receives an allowance of \$16,500 in addition to his sessional indemnity.

The eighteenth Ministry of Nova Scotia as at December 31, 1972

Premier and Chairman, Nova Scotia Power
Commission, Hon. Gerald A. Regan
Minister of Finance and Minister in charge of the
administration of the Emergency Measures
Organization (NS) Act and Regulations, Hon.
Peter M. Nicholson

Provincial Secretary (with special responsibilities for Youth and Recreation), Hon. A. Garnet Brown
 Attorney General and Minister of Highways, Hon. Leonard L. Pace
 Minister of Fisheries and Minister of Public Works, Hon. Benoit Comeau
 Minister of Public Welfare and Minister in charge of the administration of the Human Rights Act, Hon. J. William Gillis
 Minister of Education and Minister in charge of the administration of the Civil Service Act and the Civil Service Joint Council Act, Hon. Allan E. Sullivan
 Minister of Development, Hon. Ralph F. Fiske

Minister of Public Health, Minister of Labour and Minister in charge of the Administration of the Housing Development Act, Hon. D. Scott MacNutt
 Minister of Municipal Affairs, Minister of Tourism and Minister in charge of the administration of the Liquor Control Act, Hon. J. Fraser Mooney
 Minister of Mines and Minister in charge of the administration of the Water Act, Hon. Glen M. Bagnell
 Minister of Lands and Forests, Hon. Maurice E. DeLory
 Minister of Agriculture and Marketing, Hon. John Hawkins.

4.3.1.4 New Brunswick

The government of New Brunswick has a Lieutenant-Governor, an Executive Council and a Legislative Assembly. The Honourable H.J. Robichaud, sworn in October 8, 1971, is the present Lieutenant-Governor. The Legislature elected October 26, 1970 is the forty-seventh in New Brunswick's history and the twentieth since Confederation. It has 58 members, at present 32 Progressive Conservatives and 26 Liberals, elected for a statutory term not to exceed five years.

The Premier receives \$25,000 per annum in addition to the salary for any other portfolio he may hold. Each Cabinet Minister is paid \$16,000; each member of the Legislative Assembly receives \$8,000 and a \$2,500 allowance for expenses. The Leader of the Opposition receives an additional \$16,000. The Speaker and Deputy Speaker are paid \$5,000 and \$2,500, respectively, in addition to the regular indemnity.

The twenty-fourth Ministry of New Brunswick as at December 31, 1972

Premier, Hon. Richard Hatfield
 Minister of Justice, Hon. John B.M. Baxter
 Minister of Finance, Hon. Jean-Maurice Simard
 Chairman of Treasury Board, Hon. Jean-Paul LeBlanc
 Provincial Secretary, Hon. Omer Léger
 Minister of Supply and Services, Hon. Carl Mooers
 Minister of Highways, Hon. Wilfred Bishop
 Minister of Natural Resources, Hon. A. Edison Stairs
 Minister of Agriculture and Rural Development, Hon. J. Stewart Brooks
 Minister of Health, Hon. Lawrence Garvie
 Minister of Social Services, Hon. Brenda M. Robertson

Minister of Labour, Hon. Rodman E. Logan
 Minister of Education, Hon. J. Lorne McGuigan
 Minister of Municipal Affairs, Hon. Horace B. Smith
 Minister of Economic Growth, Hon. Paul S. Creaghan
 Minister of Fisheries and Environment, Hon. G.W.N. Cockburn
 Minister of Youth, Hon. Brenda M. Robertson
 Minister of Tourism, Hon. Jean-Paul LeBlanc, acting
 Minister of New Brunswick Electric Power Commission, Hon. J. Stewart Brooks, acting.

4.3.1.5 Quebec

The government of Quebec consists of a Lieutenant-Governor, an Executive Council and a National Assembly. The current Lieutenant-Governor is the Honourable Hugues Lapointe, commissioned to office February 22, 1966. The National Assembly has 108 members elected for a maximum period of five years. Party standings in the twenty-ninth Legislature elected April 29, 1970 were: Liberal 72; *Union Nationale* 17; Social Credit 12; and *Parti Québécois* seven.

Each member of the National Assembly receives a sessional indemnity of \$15,000 and an expense allowance of \$7,000. In addition to this indemnity and allowance, the Prime Minister is paid \$20,000 annually and members of the Cabinet \$19,000. Each also receives a \$3,000 representation allowance. Ministers without portfolio receive an annual indemnity of \$12,000 with a representation allowance of \$3,000. The Chief Whips and parliamentary assistants are paid an annual indemnity of \$3,500 and a representation allowance of \$1,500. The Speaker of the National Assembly receives an indemnity of \$14,000, and a representation allowance of \$3,000; the Deputy Speaker receives an indemnity of \$6,000 and a representation allowance of \$2,000. The Leader of the Opposition is paid an indemnity of \$15,000, and a representation

allowance of \$3,000. Legislation passed on July 7, 1971 provides for payment of a \$6,000 indemnity and a \$2,000 supplementary allowance to the leader in the National Assembly of any opposition party having elected at least 12 members or having obtained 20% of the total vote in Quebec at the last general election.

A member is entitled to a maximum of \$200 per month for expenses incurred in maintaining an office in his constituency if the government does not provide one. Members are entitled to reimbursement of expenses incurred in maintaining in Quebec or its immediate vicinity a second residence which they would not require had they not been elected to the Assembly, or for trips to Quebec, in an amount not exceeding \$200 per month.

The twenty-sixth Ministry of Quebec as at December 31, 1972

Prime Minister, Robert Bourassa
 Deputy Prime Minister and Minister of
 Intergovernmental Affairs, Gérard D. Lévesque
 Minister of Roads, Minister of Public Works and
 Minister of Transport, Bernard Pinard
 Minister of Cultural Affairs, Mme Claire
 Kirkland-Casgrain
 Minister of Social Affairs, Claude Castonguay
 Minister of Justice, Jérôme Choquette
 Minister of Industry and Commerce, Guy St-Pierre
 Minister of Finance, Raymond Garneau
 Minister of Municipal Affairs, Maurice Tessier
 Minister of Financial Institutions, Companies and
 Cooperatives, William Tetley
 Minister of Agriculture and Colonization,
 Normand Toupin
 Minister of Natural Resources, Gilles Massé
 Minister of Lands and Forests, Kevin Drummond
 Minister of Education, François Cloutier

Minister of Communications, Jean-Paul L'Allier
 Minister of Revenue, Gérald Harvey
 Minister of Labour and Manpower and Minister
 responsible for the Civil Service, Jean Cournoyer
 Minister of Immigration and Minister responsible
 for the Manpower Branch of the Department of
 Labour and Manpower, Jean Bienvenue
 Minister of Tourism, Fish and Game, Claude
 Simard
 Minister responsible for the Autoroutes Authority
 of Quebec, Georges E. Tremblay
 Minister of State for Intergovernmental Affairs,
 Minister of State for Finance and Minister of
 State for the Civil Service, Oswald Parent
 Minister of the Environment, Victor C. Goldbloom
 Minister of State responsible for the Eastern
 Quebec Development Bureau, Robert
 Quenneville
 Minister of State for Roads, Raymond Mailloux.

4.3.1.6 Ontario

The government of Ontario consists of a Lieutenant-Governor, an Executive Council and a Legislative Assembly. Since his appointment effective July 4, 1968, the Honourable W. Ross Macdonald has been Lieutenant-Governor. The Legislative Assembly is composed of 117 members elected for a statutory term not to exceed five years. At the general election October 21, 1971, 78 Progressive Conservatives, 20 Liberals and 19 New Democrats were elected to the province's twenty-ninth Legislature.

In addition to the regular ministries there are the following provincial agencies: the Niagara Parks Commission, the Ontario Municipal Board, The Hydro-Electric Power Commission of Ontario, the Ontario - St. Lawrence Development Commission, the Ontario Northland Transportation Commission, the Liquor Control Board, the Liquor Licence Board, the Hospital Services Commission and The Water Resources Commission.

Under the provisions of the Legislative Assembly Act (RSO 1960, c.208 as amended) each member of the Assembly is paid an annual indemnity of \$12,000 and an expense allowance of \$6,000. In addition, the Speaker receives a special annual indemnity of \$5,000, the Chairman of the Committee of the Whole \$4,000 and the Leader of the Opposition a salary of \$15,000. Each member of the Cabinet having charge of a ministry receives the ordinary indemnity as a member of the Legislature in addition to his salary as a Minister of the Crown. The salary provided in the Executive Council Act for the Prime Minister is \$20,000 and for a Cabinet Minister having charge of a ministry \$15,000. By the 1956 amendment, Ministers of the Crown who are in charge of ministries, the Minister of the Crown who is a member of The Hydro-Electric Power Commission of Ontario, and the Leader of the Opposition each receives a representation allowance of \$2,000 per annum. Each Minister without portfolio, other than that Minister who is a member of The Hydro-Electric Power Commission, receives \$5,000 salary and \$1,000 representation allowance per annum.

The eighteenth Ministry of Ontario as at December 31, 1972

Premier and President of the Council, Hon.
 William G. Davis
 Provincial Secretary for Social Development, Hon.
 Robert Welch

Provincial Secretary for Resources Development,
 Hon. A.B.R. Lawrence
 Solicitor General, Hon. John Yaremko
 Minister of Revenue, Hon. Allan Grossman

Minister of Agriculture and Food, Hon. William A. Stewart
 Treasurer of Ontario and Minister of Economics and Intergovernmental Affairs, Hon. Charles MacNaughton
 Minister of the Environment, Hon. James A.C. Auld
 Minister of Community and Social Services, Hon. René Brunelle
 Attorney General, Hon. Dalton A. Bales
 Minister of Education, Hon. Thomas L. Wells
 Minister of Labour, Hon. Fern Guindon
 Minister of Industry and Tourism, Hon. John White
 Provincial Secretary for Justice, Hon. George A. Kerr

Minister of Correctional Services, Hon. C.J.S. Apps
 Minister of Transportation and Communications, Hon. Gordon Carton
 Minister of Natural Resources, Hon. Léo Bernier
 Chairman of the Management Board of Cabinet, Hon. Eric A. Winkler
 Minister of Government Services, Hon. James W. Snow
 Minister of Health, Hon. Richard T. Potter
 Minister of Consumer and Commercial Relations, Hon. John T. Clement
 Minister of Colleges and Universities, Hon. Jack McNie
 Minister without portfolio, Hon. Margaret Birch
 Minister without portfolio, Hon. Claude Bennett.

4.3.1.7 Manitoba

In addition to a Lieutenant-Governor, Manitoba has an Executive Council at present composed of 14 members and a Legislative Assembly of 57 members elected for a maximum term of five years. The Honourable William John McKeag has been Lieutenant-Governor since July 3, 1970. As a result of the general election June 25, 1969, 28 New Democrats, 22 Progressive Conservatives, four Liberals, one member of the Social Credit party, one Liberal Democrat and one Independent were elected to the twenty-ninth Legislature.

The Premier of the province is paid a salary of \$16,600 per annum and each of the other members of the Cabinet \$15,600. Members of the Legislature are each paid a sessional indemnity of \$7,200 and a tax-free expense allowance of \$2,400. Each member attending the session and representing a constituency that is not wholly within the metropolitan area receives an additional allowance of \$600 for expenses incidental to the discharge of his duties as member. The Leader of the Opposition is paid \$15,600. The Speaker of the Legislative Assembly receives an additional indemnity of \$5,000 and expenses not exceeding \$1,000 in aggregate. The Deputy Speaker receives an additional indemnity of \$2,500 and expenses not exceeding \$500 in aggregate. Members required to live away from home receive a per diem allowance of \$15 for each day from the opening of the session to prorogation excepting days during an adjournment of the Assembly for a period of four or more continuous days.

The sixteenth Ministry of Manitoba as at December 31, 1972

Premier, President of the Council, Minister charged with the administration of the Manitoba Hydro Act, Minister of Dominion-Provincial Relations and Minister of Finance, Hon. Edward Schreyer
 Minister of Labour, Railway Commissioner of Manitoba and Minister charged with the administration of the Civil Service Act, the Civil Service Superannuation Act and the Public Servants Insurance Act, Hon. Russell Paulley
 Attorney-General and Minister of Consumer, Corporate and Internal Services, Hon. A.H. Mackling
 Minister of Mines, Resources and Environmental Management and Minister of Urban Affairs, Hon. Sidney Green
 Minister of Agriculture and Minister of Co-operative Development, Hon. Samuel Uskiw

Minister of Colleges and Universities Affairs, Hon. Saul A. Miller
 Minister of Health and Social Development, Hon. René E. Toupin
 Minister of Industry and Commerce, Hon. Leonard S. Evans
 Minister of Highways, Hon. Peter Burtiak
 Minister of Municipal Affairs, Hon. Howard R. Pawley
 Minister of Education, Hon. Ben Hanuschak
 Minister of Public Works, Hon. Russell Doern
 Minister of Tourism, Recreation and Cultural Affairs, Hon. Laurent L. Desjardins
 Minister of Northern Affairs, Hon. Ronald McBryde.

4.3.1.8 Saskatchewan

The government of Saskatchewan consists of a Lieutenant-Governor, an Executive Council and a Legislative Assembly. Since February 3, 1970 the Honourable Stephen Worobetz has been Lieutenant-Governor. The statutory number of members of the Legislative Assembly is 60, elected for a maximum term of five years. At the general election June 23, 1971, 45 New Democrats and 15 Liberals were elected to form Saskatchewan's seventeenth Legislature, which opened July 28, 1971 and is still in session.

The Premier receives \$20,000 and each Cabinet Minister \$15,000 annually in addition to a sessional indemnity and allowance. The Leader of the Opposition receives \$15,000 plus an office allowance of \$24,000 per annum, the Speaker \$5,000 and the Deputy Speaker \$3,000.

Each member of the Legislature is paid a sessional indemnity of \$6,000, an expense allowance of \$4,000 and a sessional allowance of \$2,500. Each of the members for the three northernmost constituencies of Prince Albert East, Athabasca and Meadow Lake receives a \$6,500 sessional indemnity and a \$3,750 expense allowance. Government and Opposition Whips are paid an annual allowance of \$1,000 each and legislative secretaries an annual allowance of \$3,000 each.

The eleventh Ministry of Saskatchewan as at December 31, 1972

Premier, President of the Council, Hon. A.E.

Blakeney

Attorney General, Hon. Roy J. Romanow

Minister of Agriculture, Hon. John R. Messer

Minister of Public Health, Hon. Walter E. Smishek

Minister of Municipal Affairs, Hon. Everett I.

Wood

Minister of Labour, Hon. Gordon T. Snyder

Minister of Northern Saskatchewan and Minister

of Natural Resources, Hon. G.R. Bowerman

Minister of Environment and Minister of

Co-operation and Co-operative Development,

Hon. Neil E. Byers

Minister of Education, Hon. Gordon MacMurchy

Minister of Highways and Transportation, Hon.

Eiling Kramer

Minister of Government Services and Minister of

Telephones, Hon. John E. Brockelbank

Minister of Industry and Commerce and Minister

of Mineral Resources, Hon. Kim Thorson

Minister of Social Services, Hon. Alex Taylor

Minister of Finance, Hon. Elwood Cowley

Minister of Culture and Youth, Minister of

Consumer Affairs and Provincial Secretary,

Hon. Edwin Tchorzewski.

4.3.1.9 Alberta

In addition to the Lieutenant-Governor (since January 1966 the Honourable J.W. Grant MacEwan) the government of Alberta is composed of an Executive Council and a Legislative Assembly of 75 members elected for a maximum period of five years. On August 30, 1971, 49 Progressive Conservatives, 24 members of the Social Credit party, one New Democrat and one Independent were elected to form the seventeenth Legislature.

Each member of the Legislative Assembly receives a sessional indemnity of \$9,000, a \$4,500 expense allowance and \$30 for each day during the session when the member is necessarily absent from his ordinary place of residence. In addition to the indemnity and expense allowance, the Speaker receives a salary of \$8,000 and the Deputy Speaker \$5,000. The Leader of the Opposition's salary in addition to the indemnity and expense allowance is \$22,000. The Speaker, Deputy Speaker and Leader of the Opposition also receive \$30 for each day during the session when they are necessarily absent from their ordinary place of residence. In addition to the sessional indemnity and allowance the Premier receives \$27,000, other Ministers \$22,000 and Ministers without portfolio \$16,000.

The tenth Ministry of Alberta as at December 31, 1972

Premier and President of the Executive Council,

Hon. Peter Lougheed

Minister of Agriculture, Hon. Hugh M. Horner

Minister of Federal and Intergovernmental Affairs,

Hon. Donald R. Getty

Minister of Education, Hon. Louis D. Hyndman

Provincial Treasurer, Hon. Gordon T.W. Miniely

Attorney General and Provincial Secretary, Hon.

C. Mervin Leitch

Minister of Health and Social Development, Hon.

Neil S. Crawford

Minister of Manpower and Labour, Hon. Albert E.

Hohol

Minister of Environment, Hon. William J. Yurko

Minister of Municipal Affairs, Hon. David J.

Russell

Minister of Advanced Education, Hon. James L.

Foster

Minister of Mines and Minerals, Hon. William D.

Dickie

Minister of Telephones and Utilities, Hon. Leonard

F. Werry

Minister of Public Works, Hon. Winston O. Backus

Minister of Industry and Commerce, Hon.

Frederick H. Peacock

Minister of Highways and Transport, Hon.

Clarence Copithorne

Minister of Lands and Forests, Hon. Allan A.

Warrack

Minister of Culture, Youth and Recreation, Hon.

Horst A. Schmid

Minister without portfolio, Hon. W. Helen Hunley

Minister without portfolio, responsible for

Tourism, Hon. Robert W. Dowling

Minister without portfolio, responsible for Rural

Development, Hon. George Topolnisky

Minister without portfolio, responsible for

Northern Development, Hon. J. Allen Adair.

4.3.1.10 British Columbia

The government of British Columbia consists of a Lieutenant-Governor, an Executive Council and a Legislative Assembly. Since July 2, 1968 the position of Lieutenant-Governor has been held by Colonel the Honourable J.R. Nicholson. The Legislative Assembly has 55 members who are elected for a term not to exceed five years. Following the August 1972 election, the thirtieth Legislature opened October 17, 1972 with 38 New Democrats, ten Social Credit members, five Liberals and two Progressive Conservatives sitting in the Assembly.

Each member of the Executive Council and the Legislative Assembly receives a sessional allowance of \$5,000, \$2,500 for expenses, a living allowance of \$2,000 (based on a per diem rate of \$50, not exceeding 40 days), an allowance of 25 cents per mile of the distance between his place of residence and the city of Victoria, reckoning such distance, going and coming, according to the nearest mail route, and \$500 for telegraph and telephone expenses. In addition, the Premier is paid an annual salary of \$23,000, each member of the Executive Council with a portfolio \$20,000 and each member of the Executive Council without portfolio \$17,500. The Leader of the Opposition and the Speaker receive special allowances of \$9,000 for expenses; the Deputy Speaker receives a special allowance of \$3,500.

The thirtieth Ministry of British Columbia as at December 31, 1972

Premier, President of the Council and Minister of

Finance, Hon. David Barrett

Provincial Secretary and Minister of Travel

Industry, Hon. Ernest Hall

Attorney-General and Minister of Industrial

Development, Trade and Commerce, Hon.

Alexander Barrett Macdonald

Minister of Lands, Forests, and Water Resources

and Minister of Recreation and Conservation,

Hon. Robert Arthur Williams

Minister of Agriculture, Hon. David Daniel

Stupich

Minister of Mines and Petroleum Resources, Hon.

Leo Thomas Nimsick

Minister of Highways, Hon. Robert Martin

Strachan

Minister of Labour, Hon. William Stewart King

Minister of Education, Hon. Eileen Elizabeth

Dailly

Minister of Municipal Affairs and Minister of

Commercial Transport, Hon. James Gibson

Lorimer

Minister of Health Services and Hospital

Insurance, Hon. Dennis Geoffrey Cocke

Minister of Public Works, Hon. William Leonard

Hartley

Minister of Rehabilitation and Social

Improvement, Hon. Norman Levi

Member of the Executive Council without

portfolio, Hon. Frank Arthur Calder.

4.3.2 Territorial governments

4.3.2.1 Yukon Territory

The Yukon was established as a separate territory in 1898 to meet a need for local government created by the influx of miners during the gold-rush period. The Yukon Territory Act provided for a Commissioner and a Council of not more than six, all appointed by the Governor in Council. The Commissioner in Council was given legislative powers comparable to those held by the Lieutenant-Governor and the Legislative Assembly of the Northwest Territories. By 1902, five elected councillors had been added and in 1908 a fully elected Council of ten members was introduced. A population decline following the end of the gold rush was accelerated by enlistment during World War I and in 1919 the Council was reduced to three elected members. This remained the level of government until after World War II when population and economic activity again showed an increase, beginning with the building of the Alaska Highway. In 1960, the Council was increased to seven elected members and provision was made for the appointment of an Advisory Committee on Finance.

A principal feature of territorial government is its very close constitutional and working relationship with the Government of Canada. Although the provinces and the federal government each has jurisdiction and powers allocated by the British North America Act, the authority of the territorial government is allocated only by federal legislation. The Yukon Act prescribes the structure of the executive, legislative and judicial branches of the territorial government and the scope of their authority; all residual matters remain under federal control. The Yukon Territory has fully representative but not responsible government. Under authority of the Act, Whitehorse was designated as the seat of government in 1953.

The Government Organization Act, 1966, which describes the responsibilities of the Department of Indian Affairs and Northern Development for the development of northern

Canada, is the other piece of basic legislation under which the territorial government operates. The Minister is responsible for the management of the natural resources, except game, and for the development of the North generally. Although he shares authority with the Governor in Council for directing the Commissioner in his duties, he is the effective link between the territorial and federal governments.

The Executive. The executive side of the territorial government is headed by a Commissioner appointed by the federal government. He is directed to administer the government of the Yukon Territory under instruction from the Governor in Council or the Minister of Indian Affairs and Northern Development. In practice, the Commissioner is much more responsive to the wishes of his elected Council than the Yukon Act implies and he cannot spend any territorial funds which have not been voted by Council. A growing body of territorial ordinances require Council approval for specific actions; in practice, the Commissioner never acts on any major issue without consulting Council.

Because the Commissioner does not sit with Council, the Yukon Act was amended in 1960 to bridge the gap between the executive and legislative functions of government at Council sessions. The amendment provided for the formation of an Advisory Committee on Finance composed of three members of Council appointed by the Commissioner on the advice of Council. Another step to harmonize the executive and legislative functions of government was the formation in November 1970 of an Executive Committee consisting of the Commissioner as chairman and four members: the Assistant Commissioner (Executive) and Administrator of the Yukon Territory as vice-chairman, the Assistant Commissioner (Administrative) and two members of Council to be appointed by the Commissioner on the recommendation of the territorial Council. The two Council members on the Executive Committee are also members of the Advisory Committee on Finance, leaving the third member to be appointed by Council. As part of their administrative duties, one elected member is responsible for the Department of Education and the other for the Department of Health, Welfare and Rehabilitation.

Below the Commissioner's office, the territorial public service, comprising 1,000 persons including 265 teachers, is organized into ten conventional administrative departments under the direction of the Commissioner: all are located in Whitehorse. In outlying communities territorial government administration is represented by a limited number of territorial agents concerned with the sale of liquor and licences. Health facilities are administered mainly by the federal Department of National Health and Welfare, an involvement stemming from its responsibility for Indians in the Yukon and from practical administrative considerations. The territorial government directs education, under the territorial Department of Education, engineering services and the administration of certain welfare programs.

Some administrative areas such as natural resources, which are the responsibility of the Department of Indian Affairs and Northern Development, are administered by federal public servants. The Commissioner, in addition to his constitutional role in territorial government, is also the Department's senior federal representative in the Territory. The Minister of Justice is the Attorney General of the Yukon Territory for purposes of the Criminal Code of Canada, with responsibility for the administration of criminal justice in the Territory but not for civil matters, or the constitution or organization of the courts. Law enforcement is provided by the Royal Canadian Mounted Police and the contract for its services is negotiated by the territorial government.

A detailed discussion of the territorial court system is presented in Chapter 3.

The Legislature. The Legislative Council consists of seven members elected for a term of four years. In general, all persons resident in the Territory for one year prior to the date of enumeration and 18 years of age are eligible to vote. Three of the members represent electoral districts located in or close to Whitehorse where about half of the some 20,000 residents of the Territory live. As in many other matters, a federal agency, the Office of the Chief Electoral Officer, conducts the territorial elections as a free service to the Territory. Council normally meets in session twice each year. The first session commences in January and as a major part of its work votes on the main territorial estimates, prepared by the Commissioner and approved by Council's Advisory Committee on Finance and the Minister of Indian Affairs and Northern Development. The second session is usually called in November and special sessions can be held at any time. Main sessions last from one to two months and the debates are recorded verbatim and published under the title of *Votes and proceedings*.

The Commissioner calls Council into session and prorogues it; he sits with it only by invitation to explain or defend proposed expenditures, draft legislation or policy papers which he has placed before Council. All sessions are presided over by a Speaker who is appointed by Council from among its members for the duration of each Council but is given no specific responsibilities or authority under the Yukon Act. In practice, he conducts Council proceedings under Rules of Council which are an adaptation of Canadian parliamentary procedures. A Clerk of Council controls the administrative side of its proceedings.

The matters on which Council can legislate are not significantly fewer than those enjoyed by the provinces. The main exceptions concern natural resources. These are a responsibility of the federal government which has to provide the heavy investments in transportation and other facilities needed to bring them into production. Most major policy matters are first placed before Council in the form of a Sessional Paper prepared by the Commissioner, and the draft legislation is then presented at the next session in the form of a Bill, although amendments to existing legislation may be processed concurrently with the Sessional Paper or without the assistance of this background information. Discussion is usually conducted with the Council resolved into Committee of the Whole, making it possible for the Commissioner, heads of departments and outside specialists to appear to give detailed information and advice on the subject concerned. Bills are given three readings and require the assent of the Commissioner before they become law as ordinances of the Territory. The Commissioner can reserve assent to legislation but rarely does so. As with provincial legislation, the federal government may disallow any ordinance within one year. New ordinances are published after each session; consolidated ordinances of the Yukon Territory are usually revised every ten years.

The role of the federal government. Direct federal involvement in the affairs of the territorial government extends from control of its constitution to responsibility for the operation of certain provincial-type services and for providing most of its finances. Beyond these special services, the federal government provides the usual range of national services such as the operation of Canadian Broadcasting Corporation radio stations, mail delivery and mainline airports. Full assistance under all national welfare programs is available in the Territory. Even with special financial assistance in many particular areas, the low volume of local revenues falls far short of meeting the high cost of services provided by the territorial government. The federal government picks up this financial deficit through annual fiscal arrangements known as Federal-Territorial Financial Agreements. The amount of federal financial assistance given to the territorial government is simply the difference between the forecast of revenues available to the territorial government and the forecast of the cost of a reasonable level of services to be provided by that government. In return, the territorial government forgoes any exercise of its authority to tax private and corporate incomes and to collect other corporation taxes and succession duties.

Apart from special accounts such as housing loans and amortization of borrowings from the federal government for which individual arrangements are made, the Yukon government in the year ended March 31, 1972 spent \$18.9 million on operating accounts and another \$5.1 million on capital projects. Of the total expenditure, the territorial government raised \$6.7 million locally and recovered another \$6.6 million from the federal government via shared-cost programs. The remainder was provided by the federal government under its financial agreement with the Territory.

Commissioner, Council and Council staff of the Yukon Territory as at December 31, 1972

Commissioner, J. Smith

Clerk of the Council, C.W. Pearson

Legal Adviser, P. O'Donoghue

Executive Committee: J. Smith, chairman; G.A.

MacIntyre, acting vice-chairman and member;

G.K. Fleming, Hilda Watson, Norman S.

Chamberlist, members

Members of the Council: Hilda Watson, Mike

Stutter, Donald E. Taylor, Ronald A. Rivett,

Norman S. Chamberlist, Clive Tanner, John

Kenneth McKinnon.

4.3.2.2 Northwest Territories

The Temporary Government Act of 1869 was the first legislation by the federal government to establish government in the newly acquired Rupert's Land and North-Western Territory. However, functional territorial government really dates from the North-West

Territories Act of 1875. The creation of Saskatchewan and Alberta in 1905 and the adjustment of the northern boundaries of Manitoba, Ontario and Quebec by 1912 pushed the Northwest Territories north of the 60th parallel. The 1905 legislation provided for a federally appointed Commissioner with wide executive and legislative powers and a Council of four but no councillors were appointed for 16 years. In 1921 the Council was expanded to six members and, until the first appointment of a territorial resident in 1946, it was composed entirely of senior federal officials.

Defence early warning systems, radio and greatly improved air transportation after World War II ended the extreme isolation of the North and pressures for improved territorial government soon followed. Legislative changes in 1951 and 1952 increased Council membership to eight, three of them elected from the Mackenzie District. A fourth was added in 1954. At least two Council sessions were required to be held in a year, one in the Territories and all others at the seat of government in Ottawa. The subjects on which the Commissioner in Council could legislate were increased to approximate those of the provincial legislatures except that natural resources other than game were reserved to the federal government. A Territorial Court was established in 1952.

Recent constitutional developments. The quickening of federal interest in the North in the 1950s and 1960s stimulated concern and effort to arrange for a resident territorial government and to chart the course of its future development. An amendment to the Northwest Territories Act in 1966 created three new electoral districts in the eastern Arctic and, for the first time, gave elected representation to all residents of the Territories. Also, at the ensuing election the first Eskimo was elected to the territorial Council. A separate consolidated revenue fund was set up for the territorial government and wider powers in other areas of financial administration were introduced.

Meanwhile, in 1965, the federal government had appointed an Advisory Commission on the Development of Government in the Northwest Territories which travelled widely in the North to examine the local needs for change. Following receipt of its recommendations in 1966, the federal government acted quickly to provide for a territorial administration resident in the Northwest Territories. Yellowknife was designated as the seat of territorial government. In June 1970, the federal government passed amendments to the Northwest Territories Act changing the number of elected Council members from seven to ten and decreasing the number of appointed members from five to four. The amendments also extended the life of Council from three to four years, permitted Council to set its own indemnities and to establish the voting age in territorial elections (now set at 18 years subject to a one-year residence requirement), and reduced the period of federal disallowance of territorial ordinances from two years to one.

Changes in territorial administration. Unlike the Yukon Territory, which has had its own public service since the turn of the century, the government of the Northwest Territories, until recently, has been largely dependent on the federal government for staff to implement its legislation and to operate its public services. Until 1963, the Deputy Minister of Northern Affairs (now Indian Affairs and Northern Development) was Commissioner, and the Northern Administration Branch of that Department was devoted to operating most government services in the Northwest Territories with federal public servants. In that year, a full-time Commissioner was appointed and charged with building up a territorial administration located initially in Ottawa. In September 1967 the Commissioner and about 50 staff members moved to Yellowknife and immediately assumed responsibility for the game management service, municipal affairs, the issuing of all licences, tax collection and the operation of the liquor system (already staffed by territorial contract employees). Operational responsibility for other government services was transferred from federal to territorial control in the Mackenzie District on April 1, 1969, and in the eastern Arctic on April 1, 1970. The territorial government is structured to carry out its administration through seven line and three service departments, each under the direction of a senior public servant reporting to the Executive which consists of the Commissioner, the Deputy Commissioner and the Assistant Commissioner. The field staff is organized into four regions with regional directors at Fort Smith, Inuvik, Frobisher Bay and Churchill.

Present government structure. The Northwest Territories Act, 1952, as amended, provides for an executive, legislative and judicial structure. The Commissioner is the chief executive

officer, appointed by the federal government and responsible for the administration of the Northwest Territories under the direction of the Minister of Indian Affairs and Northern Development. In practice, all major policy decisions are taken on the advice of this Council. The Commissioner can spend funds only to the extent voted by Council and all new revenue measures are subject to Council approval. Normally, the Commissioner obtains prior federal approval of proposed legislative and budgetary measures before submitting them to Council.

The Council of the Northwest Territories consists of ten elected and four appointed members and has a life of four years. It meets at least twice a year, usually for a period of three weeks, but more often if required. The Commissioner presides over Council sessions and the Deputy Commissioner sits as an appointed member. A Clerk of Council and a Legal Adviser provide the main administrative assistance and debates are recorded verbatim.

The Northwest Territories Act gives the territorial Council authority to legislate in most provincial areas of government activity except for natural resources other than game; these are reserved to the federal government which alone can provide the necessary development funds. Legislation must receive three readings and have the assent of the Commissioner; he can reserve assent but this is a rare occurrence and the federal government may disallow any ordinance within one year. The Commissioner proposes most legislation but private members' Bills are allowed except for money matters which are the prerogative of the Commissioner. Besides draft legislation, the Council gives considerable time to policy papers in which the Commissioner asks for advice or seeks authority to take a particular course of action.

The Minister of Justice is the Attorney General of the Northwest Territories under the Criminal Code of Canada, with responsibility for the criminal administration of justice but not for civil matters, or the constitution or organization of the courts (see Chapter 3). Law enforcement is provided by the Royal Canadian Mounted Police.

Continuing federal responsibility. The Government Organization Act, 1966 charges the Minister of Indian Affairs and Northern Development with responsibility for the development of the North and for the general co-ordination of federal activities in the area. Other federal government agencies, such as the Northern Health Service of the Department of National Health and Welfare and the Royal Canadian Mounted Police, are responsible for health and police services with the territorial government sharing their costs. The Ministry of Transport operates mainline airports throughout the whole of the North: the Canadian Broadcasting Corporation provides special shortwave northern broadcasts and maintains a growing number of local stations in the Territories. Federal cost-shared national assistance programs, within the competence of the territorial government, are available to it on the same conditions as to the provinces.

There are about 7,000 Indians and 13,000 Eskimos in the Northwest Territories for whom the federal government has a special responsibility. Although there are no Indian reserves in the Territories, two treaties were entered into which established certain claims to land and certain other rights. As in the provinces, legislative authority with respect to Indians and lands reserved for Indians is vested exclusively in the federal government and this authority extends to Eskimos.

Extensive financial assistance is given to the territorial government under special federal-territorial agreements, usually spanning a period of five years. These agreements serve both to allocate the financial responsibility of each government for the provision of services in the Territories and to fix the amount of the federal financial payments to the territorial government for the life of the agreement. At the present stage of development, territorial revenues fall far short of meeting the expenditures of the territorial government. Under the financial agreements, all taxes on personal and corporate incomes, corporation taxes and succession duties are reserved to the federal government.

Excluding amortization of borrowings, the territorial government, during the year ended March 31, 1972, spent about \$70 million on operating accounts and about \$21 million on capital projects. Of these expenditures, approximately \$10 million was raised within the Territories through taxes, licences and liquor revenues and \$11.5 million was recovered from residents of the Territories for services supplied. A further \$4.5 million was recovered under federal shared-cost programs. The remainder was provided by the federal government as special operating grants and loans under the financial agreement and under the special arrangements relating to the move to the seat of government in Yellowknife.

Commissioner, Council and Council staff of the Northwest Territories as at December 31, 1972

Commissioner, S.M. Hodgson

Deputy Commissioner, J.H. Parker

Clerk of the Council, W.H. Remnant

Legal Adviser, F.G. Smith

Appointed members of the Council: J.H. Parker,

Hugh Campbell, Louis-Edmond Hamelin,

Pierre Genest

Elected members of the Council: Lena Pedersen,

Bryan Pearson, Jimmy Rabesca, Paul W. Kaeser,

Welland Wilfred Phipps, Willie Adams, Lyle R.

Trimble, Nick G. Sibbeston, Tom Butters, David

Searle.

4.4 Local government

Local government in Canada comprises all government entities created by the provinces and territories to provide services that can be more effectively discharged through control at the local level. Broadly speaking, local government services are identified in terms of nine main functions — protection, transportation, environmental health, public health, welfare, environmental development, recreation, community services and education. In addition, local government, through the medium of government enterprises, may operate such facilities as public transit and the supply of electricity and gas. Education is normally administered separately from the other local functions.

Many local government organizations antedate Confederation but under the British North America Act local government was made a responsibility of the provincial legislatures, a responsibility subsequently extended to the territories when their governments were constituted in the present forms. The unit of local government, apart from the school board, is usually the municipality which is incorporated as a city, town, village, township or other designation depending on the province. The powers and responsibilities of municipalities are those delegated to them by statutes passed by their respective provincial or territorial legislatures. Some of these statutes apply to all municipalities within a province, some to a certain type or group, and many to one municipality only.

Rapid and continuing urbanization during the past two decades and the demand for services in rural areas comparable to those available in urban areas have placed great strains on local government. These strains have been aggravated by the inelasticity of the major local revenue source — the taxation of real property; at the same time, the small populations of most municipalities have hindered attempts to provide services that require economies of scale for efficient operation.

The provinces have taken a number of steps to assist local governments to meet these challenges. An increasing number of special agencies or joint boards and commissions have been created to provide certain services for groupings of municipalities. Local government revenue has been supplemented by grants from the provinces, either made unconditionally or for specific purposes. Certain functions traditionally assigned to local government have been assumed in whole or in part by the provinces. Besides encouraging the amalgamation of small units, the provinces have also established new levels of local government to provide services which can be better discharged at a regional level. "Second-tier" local governments now cover the whole of British Columbia and are planned for all of Ontario, where five now exist, and for Quebec, where three have been established. What may become a pattern for the next stage in municipal development was established in Manitoba on January 1, 1972 when the Metropolitan Corporation of Greater Winnipeg and its constituent municipalities were amalgamated into a single city.

The major local revenue source available to local government is the taxation of real property, supplemented in varying degrees by taxation of personal property, businesses and amusements. Revenue is also derived from licences, permits, rents, concessions, franchises, fines and surplus funds from municipal enterprises.

Since a description of all forms of local government would be too complex for easy comprehension, the following paragraphs describe only municipal organization in each province and in the territories as at January 1, 1972. Table 4.6 gives the total number of each type of municipality in each province and territory.

Newfoundland. At January 1, 1972, Newfoundland had 253 incorporated areas comprising two cities, 83 towns, four rural districts, 49 local improvement districts, 114 local government communities and one metropolitan area. The towns, rural districts and local improvement districts operate under the Local Government Act; towns and rural districts have elected

councils and local improvement districts have appointed trustees. Local government communities are established under the Community Councils Act in the smaller settlements and have limited powers and functions. The St. John's Metropolitan Area, incorporated under a special Act, covers the area adjoining and surrounding the city of St. John's and the town of Mount Pearl and is similar in organization to a local improvement district. There are no rural municipalities in the usual sense. Only about one fifth of one percent of the total area is municipally organized. Municipalities are supervised by the Department of Municipal Affairs and Housing.

Prince Edward Island. In this province, one city and seven towns have been incorporated under special Acts and 24 villages have been established under the Village Services Act. There is no municipal organization for the remainder of the province, although it is divided into three counties which are subdivided into school sections with elected school boards. The organized municipalities are administered by the Department of Community Services.

Nova Scotia. This province is geographically divided into 18 counties; 12 of these constitute separate municipalities and the remaining six are each divided into two districts or municipalities, making a total of 24 rural municipalities. Within and under the jurisdiction of these municipalities there are 25 incorporated villages that provide limited services. In addition, there are three cities operating under special charters and special legislation and 38 towns operating under the Town Incorporation Act. Although geographically located within counties or districts, cities and towns are entirely independent of them except as to joint expenditures. There is no part of the province that is not municipally organized. Supervision of municipalities is exercised through the Department of Municipal Affairs.

New Brunswick. In New Brunswick municipal organization now includes six cities, 21 towns and 94 villages. The remainder of the province is not municipally organized and is administered by the provincial government. There are 192 unincorporated local service districts established to provide services that are municipal in nature but these are administered by the Department of Municipal Affairs and are not municipal organizations. Municipalities are supervised by the Department of Municipal Affairs.

Quebec. The more densely settled areas of Quebec, comprising about one third of the area of the province, are municipally organized; the remainder is governed by the province as "territories". The organized area is divided into 74 county municipalities which look after matters of general interest within the county. Cities and towns are excluded from the county system for political and administrative purposes except for certain joint expenditures. The remaining municipal corporations and the unorganized territory within counties fall under the county system. The counties have no direct powers of taxation; funds to finance the services falling within their jurisdiction are provided by the municipalities forming part thereof. The municipalities are governed by Special Charter, by the Cities and Towns Act or by the Municipal Code. On January 1, 1972, there were 1,589 municipalities, comprising 67 cities, 197 towns, 283 villages, 504 parishes, 155 townships, 13 united townships and 370 municipalities without designation. Major municipal consolidations began in 1965 with the fusion of the 14 municipalities on Île Jésus into the new city of Laval. At the beginning of 1970, the Montreal and Quebec Urban Communities and the Outaouais Regional Community were established in which integration of services will be staged gradually. Supervision of and assistance to municipalities are through the Department of Municipal Affairs and the Quebec Municipal Commission.

Ontario. Slightly more than one tenth of Ontario's area includes 95% of its total population and is municipally organized; the remainder is under direct provincial administration. The settled section of the province is divided into one metropolitan municipality, three regional municipalities, one district municipality and 34 counties. In addition, there are 34 cities, six separated towns, five boroughs, 147 towns, 144 villages, 530 townships and 16 improvement districts. The Municipality of Metropolitan Toronto, in existence since January 1, 1954, encompasses one city and five boroughs, and is responsible for assessments, police, water supply, sewerage, metropolitan road systems, planning, etc. The regional municipalities of Ottawa - Carleton, York and Niagara have replaced the county administrations in their respective areas and assumed certain responsibilities over all the municipalities within their

boundaries. The District Municipality of Muskoka was incorporated on January 1, 1971 to assume responsibilities, similar to those of the regional municipalities, over the reorganized municipalities of the former district of Muskoka. This form of regional government in Ontario is also contemplated in other areas. Each county, although an incorporated municipality, comprises the towns (with the exception of six separated towns), villages and townships situated within it. Some municipalities are located outside the counties in areas called districts. These districts are in the western and northern parts of Ontario and are not municipal entities. Supervisory control of municipalities is exercised by the Department of Municipal Affairs and the Ontario Municipal Board under the Municipal Act and other Acts governing aspects of municipal government.

Manitoba. Manitoba has five cities, 33 towns, 41 villages and 105 rural municipalities. These are supervised by the Department of Municipal Affairs under the Municipal Act and special charters, except the Metropolitan Corporation of Greater Winnipeg which is under the jurisdiction of the Department of Urban Affairs. There are 19 local government districts incorporated under the Local Government Districts Act where the province has placed a resident administrator to carry out the functions of a municipal council. The unorganized areas are the direct responsibility of the provincial government.

Saskatchewan. All municipalities in Saskatchewan derive their powers from general Acts that are designated with the name of the type of municipality. There are 11 cities, 131 towns, 356 villages and 292 rural municipalities. The area so organized consists of most of the southern part of the province, the remainder of this portion being administered by the province through nine unincorporated local improvement districts. The northern part is sparsely populated and some municipal services are provided by the province through the operation of the Northern Administration District. Municipalities are supervised by the Department of Municipal Affairs.

Alberta. This province has an Act applying to each type of municipality and, under these Acts, the Department of Municipal Affairs supervises the nine cities, 102 towns, 167 villages, 18 municipal districts and 30 counties. The counties administer schools in addition to municipal functions. There are 24 improvement districts administered directly by the Department of Municipal Affairs and three special areas under the Special Areas Board also responsible to the Department of Municipal Affairs.

British Columbia. In 1967, the government of British Columbia instituted regional government in the province and by January 1, 1972, 28 regional districts had been established. These regional districts are developing and are assuming responsibility for certain services from municipalities within their boundaries as well as providing services to previously unorganized areas. There are 31 cities, 14 towns, 60 villages and 39 districts. Districts are mostly rural although some adjacent to the principal cities of Vancouver and Victoria are largely urban in character. Municipalities are supervised by the Department of Municipal Affairs. In addition, there are unincorporated local districts supervised by the Department of Lands, Forests, and Water Resources that have been set up to provide certain municipal services such as protection, waterworks, irrigation, etc.

Yukon Territory and Northwest Territories. In the Yukon Territory, there are two cities, one village and three local improvement districts; the Northwest Territories includes one city, three towns and three hamlets. The local improvement districts in the Yukon and the hamlets in the Northwest Territories, although incorporated, are developmental forms of local government. Supervision of these municipalities is provided by the respective territorial governments.

4.5 Government economic planning agencies

4.5.1 The Economic Council of Canada

4.5.1.1 Organization

The Economic Council of Canada was established as an economic advisory body with broad terms of reference by Act of Parliament assented to on August 2, 1963. Its primary role is to advise and recommend how Canada can achieve the highest possible levels of employment and efficient production so that the country may enjoy a high and consistent rate of economic

growth and that all Canadians may share in rising living standards; to recommend what government policies will best help to realize the economy's potential for growth; to consider means of strengthening and improving Canada's international financial and trade position; and to study how national economic policies can best foster the balanced economic development of all areas of Canada.

The initial work of the Economic Council was built around five basic economic and social goals — full employment, a high rate of economic growth, reasonable stability of prices, a viable balance of payments, and an equitable distribution of incomes. In setting these objectives, the Council has faced a twofold challenge. Not only has it undertaken the difficult task of defining goals that have many complex aspects, but it has been very much aware of the necessity of making them consistent with one another, incorporating their many important and complicated interrelationships. The Council has also stressed repeatedly that its concern has been not with one predominant goal, but with simultaneous achievement of the whole set of interrelated goals.

The Council consists of up to 28 members appointed by the Governor in Council. These include a chairman and two directors, who serve full-time in their professional capacity, and 25 members selected from industry, labour, finance and commerce, agriculture and other primary industries, and the general public. No government officials are appointed to the Council. The chairman and the directors (one of whom may be elected as vice-chairman by the Council) are appointed for seven-year terms. The other members, who are appointed for three-year terms "after consultation with appropriate representative organizations", are intended to reflect a very wide diversity of interests from the different private sectors of the economy and different regions of the country. Nevertheless, they sit on the Council as individuals and not as delegates of particular organizations or groups. Their knowledge and practical experience is complemented by a research staff, plus administrative and auxiliary personnel. The Council is therefore a mixed body, served in its deliberations by professional staff.

4.5.1.2 The years to 1980

The Economic Council periodically undertakes an appraisal of Canada's economic potential over the medium-term future. In the *First*, *Fourth* and *Sixth annual reviews*, the Council published measures of the aggregate potential growth of the Canadian economy based on projections of the labour force, its distribution by age and sex, educational attainment, and the number of hours worked per week, along with estimates of the increase in the stock of capital and the rate of increase in productivity. In the *Ninth annual review*, the Council employed a sophisticated new analytical tool, the CANDIDE model (see below), to explore the period to 1980. A wide variety of assumptions were made concerning influences that could affect the development of the Canadian economy over this period. The Council chose to present a number of alternatives indicating what might be achieved. The Council examined six alternatives. In five of the six alternatives, a favourable external environment was assumed, with US growth at a rate as high as the 1960s and a somewhat higher rate of growth for overseas industrial economies. Each of these alternatives differed in terms of assumptions concerning fiscal policy with variations both in the level of government activity and in the type of government expenditure. In the sixth alternative, where a less favourable external environment was projected, partial compensation for reduced foreign demand was assumed in the form of a very high rate of increase in government transfers to persons.

In all of these alternatives, a relatively high rate of growth in over-all output of the economy is projected for this decade, ranging from an annual average rate of 5.5% to 5.7%, in comparison with 5.4% in the decade of the 1960s.

The rate of unemployment for the last five years of the decade ranges from an average of 3.8% to 4.3%. The rate of rise of prices over the decade, as reflected by the implicit deflator of gross national expenditure, ranges from 2.5% to 2.9% annually as compared with 3.2% over the preceding decade but this result is influenced by an assumption of no increase in the rate of indirect taxes and there is also no increase projected in interest rates. The projected increase in output per worker averages 2.4% annually as compared with 2.3% over the 1960s.

Each of these alternative growth patterns was deliberately designed to produce high employment in the second half of the 1970s and, therefore, a low unemployment rate, averaging 4.0% of the labour force. In making its projections, the Council estimated how to

proceed from the current economic situation to a fully employed situation with a minimum of delay while maintaining compatibility with acceptable cost and price stability. In addition to estimating long-run economic potential, however, the Council felt it was necessary to regularly reassess economic circumstances in the context of interim targets. This proposed framework of flexible performance indicators would be used, as the Council stated, "both as temporary objectives and as criteria for assessing progress". These national indicators are needed to ensure consistency among policies and to relate in a systematic way the past, the present and the future. They are particularly desirable in Canada in view of the wide regional disparities that exist and, in fact, necessary in view of the degree of decentralization of decision-making in the federal system.

The initial set of indicators proposed covers the years 1973 to 1975. They are meant to be used as an internally consistent group and not to be taken one by one in isolation. They are directed to both private and public decision-makers. In each of its subsequent annual reviews, the Council will revise and update these indicators in the light of actual developments in the economy. In addition to recommending the utilization of such a system of medium-term performance indicators, the Council made the following two recommendations as to the manner in which they should be used:

"... that each year one of the federal-provincial meetings of prime ministers or of ministers of finance be devoted to the medium-term performance indicators developed by the Economic Council of Canada and to an examination of their implications for the federal and provincial governments."

"... that a national economic conference be convened each year under appropriate auspices to bring together representatives of the various sectors of economic activity, both public and private, for assessing the medium-term economic prospects in the framework of performance indicators that will be published annually by the Economic Council of Canada."

4.5.1.3 Research program

A number of other research projects are under way at the Council; the projects discussed here represent the over-all program. Research may be pursued further on some topics than others and the results disseminated in a variety of ways: some studies will form the basis of major Council publications, while others may be used in staff and special studies or as internal working papers.

Canadian commercial policy study. International trade has always been of great importance for Canada, and will continue to be so in the 1970s. During this decade Canada, like other trading nations, will be faced with the necessity of adjusting to the effects of a number of far-reaching changes in the international economy. This study will focus on some of the major commercial policy options that may be open to this country in the light of these changes.

This study will begin by setting out the advantages and disadvantages of the three basic possibilities — higher protection, status quo, and lower protection — but will be followed by a more detailed analysis of options of a multilateral, bilateral, and unilateral nature. Major emphasis will be placed on the economic implications of these various options, including their possible effects on the various regions and industrial sectors of the economy.

The study will then link up with a broader economic policy framework by considering the implications of possible commercial policy changes for other policy fields, with particular emphasis on commercial policy as part of a broader and more general industrial strategy. In this context, policies relating to science and technology, the rationalization of industries, and adjustments to absorb the impact of trade policy changes on particular regions, industries, and occupational groups, will be examined.

The CANDIDE model. The CANDIDE (CANadian Disaggregated InterDepartmental Econometric) model is a large-scale econometric model developed by agencies and departments of the Government of Canada over the past several years. On April 30, 1970 a submission to the federal Treasury Board was made by the Economic Council of Canada, with the support of Statistics Canada and the Departments of Finance, Regional Economic Expansion, and Manpower and Immigration, for funds to finance the development of a medium-term econometric model of the Canadian economy. The model is now operational and has provided the basis for the Council's review of the economy and its future prospects in the *Ninth annual review*. A complete technical description of the model is available in a series of CANDIDE Project Papers.

The Council will continue to play a leading role in the maintenance and improvement of the existing model and will provide considerable research resources for this purpose. Work on

these improvements will involve further testing of the properties of the model and re-specification of some of the existing equations in the light of the results. Also, data revisions such as those of the national accounts will be incorporated.

In addition, further development of the model for policy applications will be undertaken by many of the organizations making use of it, especially government departments and agencies. This will involve extensive training of the users, and the Council will provide initial support in this area.

The construction reference. In Section 10 of the Council's Act, provision was made for the Council to study and give advice on a wide range of matters under special reference from the Minister. Work on the third such reference, an examination of "Cyclical instability in the construction industry", is now under way, and a report on the findings, with recommendations for improvement, will be issued upon completion of the research.

The long-term future. On March 15, 1972 the Council accepted in principle the recommendation of the Senate Special Committee on Science Policy "to devote more emphasis to the long-term future in its work".

As a first step, the Council will concentrate on future technological change in the broader context of the evolving social and economic environment. Foreign investment has promoted the importation of new products and processes developed abroad. It may also have resulted in curtailment of industrial research in Canada and a reduction in productive employment opportunities for people trained in Canadian universities. Particular attention will be devoted to the sources of innovation and to practical means of stimulating an increase in innovating activity. Also, consideration will be given to the time factor in terms of the lag between invention and prototype, pilot plant and commercial production, initial industrial application, and the broad acceptance of new processes and products.

Two of the Council's objectives will be to explore the sectoral implications of innovation and the impact of diffusing this innovation through the economy. Key sectors, such as transportation and communication, might warrant special attention because innovation in these industries would have an effect on many other industrial sectors. Identifying the sources, vehicles of diffusion, and impact of innovation will be the main thrust of this research.

Regional disparities. In a country such as Canada, with its wide regional differences, its highly decentralized system of private decision-making, and its constitutional system, which divides authority for economic policy decisions between the federal and provincial governments, national economic issues cannot be studied without consideration of regional implications. The Council, from its inception, has been concerned with the problem of regional economic disparity. Chapters in the *Second, Third, Fifth, and Sixth annual reviews* dealt with particular aspects of regional problems. In addition, two staff studies dealt in some detail with the question of interregional disparities in income. The Council must now reassess its approach to regional economic questions and envisage new directions for such research.

In this area the CANDIDE model is likely to provide a useful framework. Some work has already been undertaken on the feasibility of developing a peripheral regional model within the CANDIDE program. Strengthening the model in this way would provide a useful systematic basis for further regional research. The initial report, which provided a foundation for the CANDIDE model, contains some considerations to this effect. Subsequently, members of the research staff of the Department of Regional Economic Expansion (DREE) prepared a proposal for the development of such a regional model. They foresee preliminary results, not incorporating regional interactions, within a year. Also, they have outlined possible work on specific sectors that will increase the ability of the model to capture regional feedback with some accuracy. An arrangement for joint research by the Economic Council and DREE is under discussion.

Social indicators. In the *Eighth annual review*, the Council called for "the development of a comprehensive set of statistical measures to monitor the changing conditions of our society over a broad spectrum of concerns". These goal indicators were defined as information, compiled on a time-series basis, to measure relevant and significant dimensions of a specific goal area. Two types of indicators – Goal Output Indicators, and Goal Distribution Indicators – would give a broad summary view of levels and changes in output as well as the degree of distribution of the aggregate output among regions, income groups, etc. There is general agreement that the measures upon which government decisions presently rely are inadequate

for sound decision-making. Clearly, the availability of output-oriented social indicators with their socio-economic characteristics would have a positive effect on the quality of decision-making.

Social indicator work permits entry into a number of areas of concern. At the present time the Council is developing indicators in three fields — education, urban systems, and health — and intends to undertake work on indicators concerned with cultural and linguistic relationships. This choice should not be viewed as restrictive, since the testing and application of these indicators will lead to other areas as well. For example, using educational outputs as inputs in a labour force production function could provide additional information for the study of manpower policies. In a similar way this work would have a considerable impact in studies of poverty, the economics of leisure, etc. The Council's past concern with distribution questions would be continued in this program, since the most important aspect of an indicator, from a policy viewpoint, is not so much its aggregate value as its distributional dimensions.

Financial markets. Financial markets are an important element of the Canadian economy, and the Council proposes to undertake research in this field. The type of study envisaged would cover the topic from two broad perspectives. First, the structure and evolution of domestic capital markets would be analyzed and the capacity of these markets to meet the needs of Canadian lenders and borrowers assessed. Second, an examination of the external environment would relate the operations of foreign financial markets to Canadian requirements and study the impact on the economy of financial flows into and out of the country. The implications of such flows for Canada's internal and external balance would be considered.

Labour force and labour market. The Council will undertake a comprehensive study of the characteristics and structure of the labour force and labour market. Sources of information in these matters will be reviewed and an analysis conducted into how employment opportunities and the evolving system of social programs affect the supply of labour.

4.5.2 The Department of Regional Economic Expansion

When the Department of Regional Economic Expansion (DREE) was created in 1969 to integrate and develop federal efforts to overcome regional economic disparities, the establishing legislation authorized the Department to prepare and implement, in co-operation with other federal agencies and with provincial governments, development plans and programs designed to meet the special needs of areas where growth in both employment and incomes was lagging behind other parts of Canada. A second major legislative measure, the Regional Development Incentives Act (RSC 1970, c.R-3), provides a program of industrial incentives to encourage manufacturing and processing industries to establish, expand or modernize in designated parts of the country where new jobs are needed. The original designated regions included all of the Atlantic region except Labrador, much of eastern Quebec, and parts of every other province.

The Act was amended in December 1970 to provide for incentives to regional development in the form of loan guarantees for manufacturing and processing facilities and selected new commercial operations. The amendment also introduced a special incentive which can be offered for plants brought into production not later than December 31, 1973 in the counties of Stormont, Glengarry and Prescott in eastern Ontario and in the southwestern portion of Quebec, areas not previously designated. In the Atlantic Provinces this special incentive is available in addition to the regular incentives.

The over-all program provides for incentive grants of up to \$30,000 per job or one half of the capital to be employed in the operation, whichever is less. The amount of incentive offered in an individual case is determined by assessing the various financial and economic implications of each project. Factors analyzed include the project's economic impact on the region concerned and the company's need for an incentive in order to create a viable operation in the designated region. Experience to date has shown that these incentives exert a strong influence on industry to undertake new activity in the designated areas. From the program's introduction in July 1969 to January 1, 1973, 1,957 applicants accepted offers of incentives totalling approximately \$324.4 million for projects involving an estimated total investment of \$1,616 million, and the creation of some 81,750 new jobs in various parts of the country when the new operations are brought into production.

Special area program. To make industrial incentives as effective as possible in overcoming regional disparities, slow-growth regions must have centres which will attract industry by ensuring that the necessary utilities and services, as well as a wide variety of social facilities to meet the needs of a growing population, are available. For this reason, one of the major purposes of the Department's special area program is to speed the development of such centres by helping provincial governments to build up essential municipal services.

Under the program authorized by the 1969 Government Organization Act, the federal government, in consultation with a province, can designate areas where special action is needed to promote economic expansion and social adjustment. Because development plans are designed, through federal-provincial co-operation, to meet specific needs, the type of federal action varies from area to area.

The first 22 special areas under the program were designated in March 1970 and federal-provincial agreements were signed covering specific infrastructure development projects in 18 of these areas. In the four other areas, the main federal assistance consists of incentives to industry. A 23rd special area, Ste-Scholastique, was designated in February 1971 and infrastructure projects for that area were included in an amended Special Areas Agreement with Quebec. The agreements commit the Department to provide various provinces with a total of up to \$440 million in grants and loans over the period to March 1975, depending on the designated period and funding arrangement for each special area. This is additional to any federal money that may be offered in industrial incentives. The agreements provide for the inclusion of other jointly identified projects or for the joint preparation of further development plans for areas not already designated. In addition, DREE will consult with the provinces regarding the possible future designation of further special areas.

The Cape Breton Development Corporation was established in 1967 to rationalize the coal industry of Cape Breton Island and broaden the economic base of the area by assisting the financing and development of industry to provide employment outside the coal mines. From its head office in Sydney it now operates three mines in the Sydney coalfield and is developing one new one. It is actively engaged in development of the tourist industry as well as primary products and various secondary industries. The Corporation offers a very flexible program and the amount of financial assistance it makes available is determined by the merits of each individual application. The Corporation reports to Parliament through the Minister of Regional Economic Expansion.

Other DREE programs. The Agricultural and Rural Development Act (ARDA) is a federal-provincial shared-cost program with provisions for rural development and adjustment programs. Five-year ARDA agreements, for the 1970-75 period, have been signed with all provinces except Prince Edward Island, which is covered by a comprehensive rural development plan. New special agreements emphasizing programs for disadvantaged Indian and Métis people have also been signed with Manitoba, Saskatchewan, Alberta and British Columbia.

The Fund for Rural Economic Development (FRED) was replaced by DREE's special area program, but five projects in operation at the time will continue to completion.

Since its creation in 1935 the Prairie Farm Rehabilitation Administration (PFRA) has concentrated on large irrigation and water-control projects, and on irrigation, stock-watering and domestic water supply projects at the farm level. It has also distributed, free of charge, up to 10 million seedlings a year for farm shelterbelts. As a continuing entity within DREE, PFRA has been given new responsibility in implementing departmental programs in Alberta, Saskatchewan and Manitoba.

The Newfoundland Resettlement Program is a federal-provincial shared-cost program established to help people in Newfoundland move from areas where economic prospects are poor to parts of the island that afford better employment opportunities and public services.

The Atlantic Development Council, with 11 members appointed by the federal government in consultation with the governments of the Atlantic Provinces and the Canada Council on Rural Development, composed of representatives of private organizations who are appointed by the Minister, both act as advisory bodies to the Minister of Regional Economic Expansion.

4.5.3 Provincial planning agencies

Nova Scotia's Voluntary Planning, an organization representing non-government elements of the Nova Scotia community, was established in 1963 with the general objective of involving the private sector, on a co-ordinated and balanced basis, in a continuing program of economic and social development.

The organization comprises the following main components: sector committees representing "grass root" elements of producers, private business, labour and government in agriculture, construction, fisheries, forestry, mining, tourism, transportation, and secondary manufacturing; advisory councils in consumer affairs, education, power development and labour-management affairs; the Provincial Planning Board, which is made up of the sector and council chairmen, together with other representatives of business, labour and government; and a small professional staff which provides administrative and technical support to the volunteer groups.

Voluntary Planning defines its role as follows:

"To provide for the effective involvement of the private sector in development planning. To facilitate the identification of problems by the private sector and to relate appropriate private and public resources in an attempt to resolve these problems. To involve the private sector in the analysis of government planning proposals during the process of their development, and prior to final approval."

Through this planning agency government has a single contact with all major elements of the private sector and the private sector has both a forum for discussing mutual problems and a channel with government for submitting co-ordinated views on any aspect of development planning.

Quebec Planning and Development Bureau. In 1969, the Quebec Planning Board, created the previous year, became the Quebec Planning and Development Bureau, a corporate body administered by a director-general, who is chairman, and five other members appointed by the Lieutenant-Governor in Council.

With the objective of making the best possible use of the province's human and natural resources, the Quebec Bureau plans research and programs for economic and social advancement and for area development. It acts as a liaison between other provincial departments and agencies involved in planning and development, gathers information about their policies and programs and co-ordinates research activities. The Bureau advises the government about development projects undertaken and makes recommendations based on its own research. In addition, it directs any projects the Lieutenant-Governor charges it with and administers funds available for its program.

Two organizations advise the Bureau: the Interdepartmental Planning and Development Council comprising all Deputy Ministers of the Quebec government, and the Quebec Planning and Development Committee which represents Quebec socio-economic organizations, major specialized councils, regional representatives and special members. These two agencies advise the Bureau on subjects referred to them for consultation; however, the Bureau must indicate to the Council how it proposes to carry out its duties as liaison office for the implementation of plans, programs or projects.

The Bureau is responsible for administering three main agreements: (1) the Canada - Quebec Co-operation Agreement for Development of the Lower St. Lawrence, Gaspé and Magdalen Islands, covering the period 1971-76, which began under the FRED program and replaced the 1968 Agreement on Eastern Quebec; additional funds made available when the Agreement was revised facilitated a shift in emphasis to development programs; (2) the Canada - Quebec Federal-Provincial Rural Agreement, 1971-75, which operates under the ARDA program, makes funds available to speed up implementation of an integrated resource-development program in the Saguenay - Lake St. John and northwestern Quebec areas; and (3) the Canada - Quebec Federal-Provincial Agreement Concerning the Development of Special Areas, which covers development in the Quebec City, Trois-Rivières and Sept Îles - Port Cartier regions as well as in the sub-region of the new Montreal International Airport near Ste-Scholastique.

The Ontario Economic Council, formed initially by Order in Council in 1962, was established by legislation in 1968. It was conceived as a provincial organization in which representatives of a broad cross-section of informed people could pool their knowledge and experience regarding social and economic questions, commission research and formulate policy

recommendations to the public and private sectors. At present, 18 (of a maximum 21) Ontario citizens serve on the Council, representing business, finance, labour, agriculture, universities and government. Each member serves without compensation for a term of one, two or three years. The Council meets monthly, generally in Toronto although meetings are held occasionally in other Ontario centres.

Essentially, the Council operates as an advisory body reporting some of its findings directly to the Ontario government and publishing others for wider distribution. Recent reports cover the fields of immigration, government reform, poverty, urban development, social change, municipal reform and municipal waste disposal. A biennial index of research projects carried on within provincial government agencies and departments and certain industrial companies operating in Ontario is also published.

The Council shares the Ontario government's view that the economy of the province is not an entity separate from Canada. For this reason the Council does not undertake separately for Ontario what the Economic Council of Canada has done and is doing for Canada as a whole. Projects are undertaken with the Economic Council of Canada on a co-operative basis and information is exchanged between the two Councils.

A small permanent Council staff undertakes direct assignments and supervises the design and administration of projects assigned to others. Areas of study are established as a result of liaison and discussion with the public and private sectors. Until recently the greater portion of the Council's research was carried on within Ontario universities. However, the professional services of private consulting firms are now being used more frequently.

4.6 External relations

4.6.1 Canada's international status

The growth of Canada's international status is reflected in the development of the Department of External Affairs. Until the 20th century Canadian negotiations with foreign countries were conducted through the British Foreign Office and dealings with other parts of the Empire through the Colonial Office; Canadian interests abroad were handled by British diplomatic and consular authorities and all Canadian communications to other governments went through the Governor General. The gradual recognition of Canadian autonomy in international affairs and increased Canadian responsibilities abroad made expansion of services and representation after 1920 not only inevitable but imperative. British diplomatic and consular authorities could no longer conveniently look after all Canadian interests. An important step in the evolution of the Department of External Affairs as the foreign service arm of the Canadian government resulted from an agreement reached at the 1926 Imperial Conference which changed the Governor General's role from that of representative of the British government to that of personal representative of the Sovereign. Britain, no longer officially represented here, appointed a High Commissioner to Canada in 1928; after July 1, 1927 correspondence from foreign governments, including that from the Dominions Office in London, was directed to the Secretary of State for External Affairs (a portfolio held by the Prime Minister until 1946) instead of to the Governor General.

In the 1920s and 1930s Canada established diplomatic relations with Australia, Belgium, France, Ireland, Japan, the Netherlands, New Zealand, South Africa and the United States and during the 1940s, with the wartime governments of Belgium, Czechoslovakia, Greece, the Netherlands, Norway, Poland, Yugoslavia functioning in London or Cairo, and with the Argentine Republic, Brazil, Chile, China, Cuba, Mexico, Newfoundland, Peru and the USSR. High Commissioners were accredited to India, Pakistan and Ceylon (Sri Lanka) and subsequently to other countries as they became independent and joined the Commonwealth. In the 1960s, Canada also developed its diplomatic relations in the French-speaking world, particularly with the newly independent francophone states of Africa. Relying on a system of multiple accreditation, Canada now has ambassadorial links with all of the 21 francophone African countries. Diplomatic relations were established with the Holy See in 1969 and with the People's Republic of China in 1970. Today, Canada maintains formal diplomatic relations with all 20 countries in Latin America and has diplomatic, consular or trade representation in 127 countries.

Membership in international organizations has entailed establishment of other offices outside Canada. A Permanent Canadian Delegation to the United Nations in New York was

set up in 1948; a year later a Canadian office was opened at the organization's European headquarters in Geneva. Now called Permanent Missions, these offices have since been expanded. As one of the founding members of the North Atlantic Treaty Organization (NATO) in 1949 Canada remains active in the Organization. When the NATO Permanent Council was established in 1952 a Canadian Permanent Delegation was set up in Paris (transferred to Brussels in 1967). A Canadian Permanent Delegation to the Organization for Economic Co-operation and Development is in Paris. In addition to these permanent international bodies and their various committees, officials of the Department of External Affairs represent Canada at many international conferences.

4.6.1.1 Diplomatic and/or consular representation

Canadian representation abroad. Names of current representatives are given in *Canadian representatives abroad* published once a year and available from Information Canada, Ottawa.

Representation of other countries in Canada. Names of current representatives are given in *Diplomatic corps and consular and other representatives in Canada*, published three times a year (February, June, October) and available from Information Canada, Ottawa.

4.6.1.2 Federal-provincial aspects of Canada's international relations

As a result of expanding provincial interests abroad machinery was established in 1967 within the Department of External Affairs to maintain close liaison with the provinces and to facilitate their international activities in a manner that would fully meet provincial objectives and at the same time be consistent with a unified Canadian foreign policy.

The federal government's position was outlined in the 1968 White Paper *Federalism and international relations*, which emphasized that Canada's foreign relations must serve the best interests of all provinces as well as those of its two major linguistic communities. To this end federal government policies include continued promotion of national unity through an adequate projection internationally of Canada's distinct bilingual character, preservation of Canada's international personality and appropriate recognition of legitimate provincial interests beyond national borders.

Provincial participation at international conferences and in the work of international organizations on a wide range of subjects, including human and civil rights, education, health, agriculture and labour, is assured by the inclusion of interested provincial officials on Canadian delegations and by the canvassing of provincial governments for their views on the positions and attitudes which Canada might adopt on these subjects internationally.

Other aspects of Canada's international relations of particular interest to the provinces include the promotion of trade, investment, new industries, immigration, tourism, cultural exchanges, environmental questions, science and technology, assistance to developing countries and bilateral and multilateral agreements. The promotional activities of the provinces have led to an increase in the number of official provincial visits abroad. The federal government, through the Department of External Affairs and its Embassies and High Commissions, assists provincial officials by making arrangements and appropriate appointments for their visits abroad and in co-ordinating visits of foreign personalities to provincial capitals.

In matters of aid to developing countries, the federal government encourages wider federal-provincial consultation to ensure that specific projects initiated by the provinces are co-ordinated with Canada's aid contribution as a whole.

Similarly, when the terms of treaties, conventions and other formal agreements between Canada and other countries touch on provincial or joint federal-provincial fields of jurisdiction, the federal government consults with the provinces before or during the negotiating stage to harmonize federal and provincial interests.

4.6.2 International activities

4.6.2.1 Canada and the Commonwealth

Over the years the Commonwealth has evolved significantly in composition and outlook. Its present membership of 31 sovereign states covers about one quarter of the earth's land surface, represents approximately 850 million people of many races, colours, creeds and languages, and includes both economically developed and developing countries as well as governments committed and uncommitted in the international power groupings. The interests

of its members extend to all continents and the variety of issues demanding attention increased greatly during the 1960s and will undoubtedly continue through the 1970s.

Commonwealth members listed according to the year (if post-1931, noted in parentheses) when membership was proclaimed are as follows: Britain; Canada; Australia; New Zealand; India (1947); Sri Lanka (1948); Ghana (1957); Nigeria (1960); Cyprus (1961); Sierra Leone (1961); Jamaica (1962); Trinidad and Tobago (1962); Uganda (1962); Kenya (1963); Malaysia (1963) – when Singapore, Sarawak and Sabah joined the Federation in 1963, Malaya became Malaysia; Malawi (1964); Malta (1964); Tanzania (1964) – in 1964 Tanganyika and Zanzibar joined to form the United Republic of Tanzania; Zambia (1964); Gambia (1965); Singapore (1965) – Singapore separated from Malaysia in 1965; Guyana (1966); Botswana (1966); Lesotho (1966); Barbados (1966); Mauritius (1968); Swaziland (1968); Tonga (1970); Western Samoa (1970); Fiji (1970); and Bangladesh (1972). The Commonwealth of the Bahama Islands will become a full member of the Commonwealth after attaining its independence on July 10, 1973. Nauru, which became fully independent in 1968, has “special” membership in the Commonwealth which entitles it to all the advantages of membership except attendance at Heads of Government Conferences. Through their association with Britain, which has retained responsibility for foreign affairs and defence, the six West Indies Associated States (Antigua, Dominica, Grenada, St. Kitts - Nevis - Anguilla, St. Lucia and St. Vincent) also have an appropriate relationship with the Commonwealth.

Continuing membership in the Commonwealth has been an important aspect of Canada's foreign policy. It has supported the extension and development of a vigorous and effective Commonwealth capable of exerting a beneficial influence for international peace and progress. Commonwealth ties give Canada a special relationship with this group of nations which, despite the diversity of their backgrounds, share important common ideals and traditions, characterized by a spirit of co-operation developed through consultation and a continuous exchange of views.

The Commonwealth Secretariat was established by a 1965 decision of heads of government and is located in Marlborough House in London. The Secretariat organizes and services official Commonwealth conferences; it facilitates the exchange of information between all member countries and serves as a visible symbol of the co-operative spirit of the Commonwealth. Canada's contribution to the 1971-72 budget of the Secretariat was \$275,699 or 17.9% of the total.

The most important initiative of the Secretariat is the organization of conferences of the Commonwealth Heads of Government; the latest was held in Singapore in January 1971. The next will be hosted by Canada in Ottawa in August 1973. Other Commonwealth conferences held in 1971-72 included the Fifth Commonwealth Education Conference in Canberra, the Third Quinquennial Conference of the Commonwealth Council of the Royal Life Saving Society in London, the annual Commonwealth Finance Ministers Meetings in Nassau and London, the Meeting of Commonwealth Officials on Consular Relations within the Commonwealth in London, and the Meeting of Commonwealth Senior Officials on Techniques of Government and the Commonwealth Telecommunications Conference, both in Ottawa.

4.6.2.2 The French community

Canada is a bilingual country with more than 6 million French-speaking inhabitants. To make the most of this special characteristic internationally, Canada has established close links with other francophone countries. Its bilateral relations with France have developed greatly in recent years through political consultations, parliamentary visits, cultural and scientific exchanges, increased trade, exchanges of government officials and defence production co-operation. To its relations with French-speaking European countries has been added considerable bilateral aid to the French-speaking Third World. A growing proportion of Canadian economic aid has been directed to francophone countries in Africa; in 1972-73 the Canadian International Development Agency allocated more than \$68 million, or 21% of Canada's bilateral aid budget, to this group.

Recognizing the value of ties with an international community of some 30 countries with 150 million inhabitants, Canada has played an active role in developing multilateral co-operation among French-speaking countries. It is a founding member of the *Agence de coopération culturelle et technique* and in 1972 was the host for the first annual meeting of the

Agency's General Conference. This conference formally noted the conditions agreed on by the federal and Quebec governments by which the latter was admitted to the institutions, activities and programs of the agency as a participant. The event confirmed Quebec's special interest in co-operation among French-speaking countries. Since that time the governments of New Brunswick, Ontario and Manitoba have become involved in the Agency's activities. Canada is also a member of the Conference of Education Ministers of the Francophone States of Africa and Madagascar as well as being a founding member of the Conference of the Youth and Sports Ministers of Francophone Africa and Madagascar; the fifth Conference will be held in Canada in 1974. In 1971 Canada took part in the Conference of Ministers of the Civil Service of French-speaking countries. Canadian participation is based on full federal co-operation with the provinces interested in these organizations.

4.6.2.3 Canada and the United Nations

Firm support for the United Nations is an essential element of Canadian foreign policy. Over the years Canada has contributed to UN peacekeeping efforts in various parts of the world, including the Middle East, Kashmir, the Congo, West Irian and Cyprus. At present, this country maintains a large contingent in Cyprus (UNFICYP) to assist the UN in preventing open fighting between the Greek and Turkish communities. Canada has consistently advocated strengthening the UN's peacekeeping capacity by advance planning at UN headquarters and advance cost-sharing arrangements. Despite slow progress and occasional setbacks, Canada continues to believe that the UN has an important role to play in the maintenance of international peace and security.

Canada also participates directly in the work of the UN through its membership in various UN bodies including the 13 specialized agencies and the International Atomic Energy Agency. The International Civil Aviation Organization in Montreal is the only specialized agency of the UN with headquarters in Canada.

Canada belongs to 18 subsidiary or ad hoc bodies of the General Assembly, including the Committee on the Peaceful Uses of Outer Space, the Disarmament Commission, the Special Committee on Peacekeeping Operations, the United Nations Scientific Committee on the Effects of Atomic Radiation, the Board of Auditors, the United Nations Scientific Advisory Committee, the Conference of the Committee on Disarmament, and the Committee on the Peaceful Uses of the Sea-Bed and Ocean Floor Beyond the Limits of National Jurisdiction. Canada maintains Permanent Missions to the UN in New York and in Geneva.

Canada pays 3.08% of the organization's regular budget and is the eighth largest contributor. In the UN financial year 1972, Canada's share of the net expenditures of about \$209 million was approximately \$5.5 million. The cost to Canada of maintaining its contingent in Cyprus was about \$1.6 million in 1971-72. In addition, Canada makes voluntary contributions to special UN programs such as the United Nations Development Programme (UNDP), the United Nations High Commissioner for Refugees (UNHCR), the United Nations Children's Fund (UNICEF), the United Nations Relief and Works Agency in the Middle East (UNRWA) and the World Food Programme (WFP).

Membership of the Economic and Social Council was increased in December 1971 from 27 to 54 by amendment to article 61 of the UN Charter, to take effect when two thirds of the membership of the UN, including the five permanent members of the Security Council, have ratified the amendment. Meanwhile, Canada, although not a member of the Council, does hold membership on many of its most important sub-bodies, including the Economic Commission for Latin America, the Commission on Narcotic Drugs, the Commission for Social Development, the Commission on the Status of Women, the Advisory Committee on the Application of Science and Technology to Development, the Committee on Science and Technology for Development, the Committee on the Elimination of Racial Discrimination, the Committee on Review and Appraisal of the Second Development Decade and the Committee on Natural Resources.

Canada serves on the Governing Council of the UN Development Programme and on the Executive Board of UNICEF, is a member of the Trade and Development Board of the UN Conference on Trade and Development (UNCTAD) as well as a member of all UNCTAD's main Committees — Commodities, Manufacturing, Shipping, and Invisibles and Financing relating to Trade — and is a member of the Executive Committee of the Office of the United Nations High Commissioner for Refugees. Canada played a leading role in the 1972 United

Nations Conference on the Human Environment in Stockholm and co-sponsored resolutions at the 27th General Assembly of the UN which resulted in the establishment of the 58-member Governing Council for Environmental Programmes, a voluntary Fund for the Environment and the Environment Secretariat. Canada was elected to the Governing Council, and pledged between \$5 million and \$7.5 million to the Fund over a period of five years.

Canada's total assessment and contributions to the UN, its specialized agencies and related bodies totalled approximately \$500 million during the period 1945-72 and about \$61 million in 1971-72. A breakdown of Canadian contributions to UN agencies in 1971-72 is shown in Table 4.7. The Canadian subscription to the World Bank (the International Bank for Reconstruction and Development) now totals the equivalent of \$1,022.5 million in current US dollars for 3.7% of the total. The International Development Association, an affiliate of the World Bank, has received from Canada interest-free contributions or pledges amounting to the equivalent of \$276 million in current US dollars since it was first established. The International Finance Corporation, also a member of the World Bank Group, has a total paid-in capital of about US\$107 million, of which the Canadian subscription amounts to US\$3.6 million.

Specialized agencies. Canada is a member of each of the 13 specialized agencies of the UN, as well as of the autonomous International Atomic Energy Agency (IAEA). Invested with wide international responsibilities established by intergovernmental agreement, these agencies assist in carrying out the terms of the UN Charter. The Administrative Committee on Co-ordination, established by the Economic and Social Council and composed of the Secretary General of the UN, executive heads of the specialized agencies, the director-general of the IAEA and other senior officials of the UN, considers common administrative questions, inter-agency program co-ordination and projects or problems of special urgency to be undertaken jointly by several agencies.

The International Labour Organization (ILO) was originally established with the League of Nations in 1919 and became a specialized agency of the UN in 1946. It brings together representatives of governments, employers and workers from 124 (1972) member states in an attempt to promote social justice by improving living and working conditions in all parts of the world. The ILO is responsible for a number of technical and training programs financed by the United Nations Development Programme, as well as training programs under its regular budget. It meets frequently during the year and holds a conference in Geneva each June. Canada has been a member of the ILO from its inception and as one of the leading industrial states, it has been assigned one of the ten seats on the Governing Body.

The Food and Agriculture Organization (FAO), established in 1945, is one of the largest of the specialized agencies, now having 125 members. Raising the nutrition levels and living standards of its member countries and improving production and distribution techniques for food and agricultural, fishery and forestry products are two of its objectives. To this end, the FAO Secretariat provides advisory services, collects and publishes agricultural and fisheries statistics, and organizes international conferences and meetings of experts concerned with agricultural, forestry and fisheries problems.

The FAO Council meets twice a year to give direction and policy guidance to the Secretariat; the FAO Conference meets every second year. Its 16th meeting was held in November 1971 at Rome. FAO headquarters is in Rome and regional offices are located in Washington, Bangkok, Rio de Janeiro, Santiago and Cairo. Canada participates actively in FAO functions and is a member of the Council, the Finance Committee, the Committee on Commodity Problems, the Committee on Fisheries, the Consultative Sub-committee on Surplus Disposals, the FAO Group on Grains, the North American Forestry Commission and other FAO bodies.

The Joint FAO-WHO Food Standards Programme, controlled by the Codex Alimentarius Commission, was established in November 1961 by a resolution of the FAO Conference. Its statutes were adopted by the 16th World Health Assembly. The Programme is administered by an executive committee of which Canada is a member.

The World Food Programme first began operations on a three-year experimental basis at the beginning of 1963 under the joint auspices of the FAO and the UN. At the end of 1965, it was established on a continuing basis for as long as multilateral aid is forthcoming. It attempts

to provide food aid on a multilateral basis for emergency relief and to promote economic and social development, including the feeding of children. In January 1970, \$215.6 million was pledged toward the 1971-72 program; Canada, with a pledge of \$30 million, is the second largest supporter of the Programme. In 1971, the Intergovernmental Committee of the WFP approved a target of \$340 million for 1972-73.

The World Health Organization (WHO), created in 1948, now has 133 members and two associate members. Functioning through the World Health Assembly, the Executive Board, the Secretariat and six regional committees, WHO acts as a directing and co-ordinating authority on international health matters. The objective of the Organization, as set out in its constitution, is "the attainment by all peoples of the highest possible level of health". To pursue this goal, WHO provides advisory and technical services from its Geneva headquarters to help countries develop and improve their national health services. The 25th World Health Assembly was held in Geneva in May 1972.

The United Nations Educational, Scientific and Cultural Organization (UNESCO) was established in 1946 "to contribute to peace and security by promoting collaboration among the nations through education, science and culture in order to further universal respect for justice, for the rule of law, for human rights and fundamental freedoms". Its headquarters is in Paris and total membership is 130 states.

The Organization is made up of three principal organs – the General Conference which is the policy-making body, the Executive Board and the Secretariat. Representatives from member states make up the General Conference which meets every two years to consider applications for membership, to elect the Executive Board and to plan the program and approve the budget for the ensuing two-year period. The 17th Session of the General Conference, held in Paris in 1972, approved a budget of approximately US\$119 million for 1972-73, giving priority to the educational needs of the developing countries and to science activities, particularly the application of science to development; the Canadian assessment rate is 2.91%.

The International Civil Aviation Organization (ICAO), with headquarters in Montreal, was established in 1947 to promote the safe, orderly and economic development of international civil aviation. It has a membership of 124 (1972). ICAO operations are conducted through its Assembly, Council, committees and Secretariat. Canada has been a member of the 27-nation Council, the governing body of ICAO, since its inception. The 18th triennial Assembly was held in Vienna in 1972.

The International Telecommunication Union (ITU), founded to oversee application of the International Telegraph Convention of 1865 and the International Radio Telegraph Convention of 1906, is concerned with international co-operation for the improvement and use of telecommunications for the benefit of the general public; it has 142 member countries. The Union's 1965 Plenipotentiary Conference adopted the International Telecommunication Convention. The 1973 Plenipotentiary Conference will be held in Torremolinos, Spain. Canada is represented on the 29-member Administrative Council, the executive organ of the ITU.

The World Meteorological Organization (WMO), a specialized agency of the UN since 1951, has evolved from the International Meteorological Organization founded in 1878; in 1972 WMO had 136 members. One of its major programs is the "World Weather Watch" for developing an improved world-wide meteorological system and environment. Canada is a member of the Executive Committee of the Organization. The 17th quadrennial World Meteorological Congress will be held in 1975.

The Inter-Governmental Maritime Consultative Organization (IMCO) was established in 1959 to promote international co-operation on technical shipping problems and the adoption of the highest standards of safety and navigation; its membership in 1972 was 73. IMCO exercises bureau functions for International Conventions on Safety of Life at Sea, Prevention of Pollution of the Sea by Oil and Facilitation of International Maritime Traffic. At the seventh Assembly in 1971, Canada was elected to the Council of IMCO for a two-year term and continues to hold a seat on the Maritime Safety Committee.

The Universal Postal Union (UPU) is one of the oldest and largest of the specialized agencies, having been founded in Berne in 1874 with the principal aim of improving postal services

throughout the world and promoting international collaboration; it had 146 members in 1972. The Universal Postal Congress meets every five years to review the Universal Postal Convention and its subsidiary instruments. In the interim, UPU activities are carried on by an executive council, a consultative committee on postal studies and an international bureau. The 16th Congress was held in Tokyo in 1969.

The International Monetary Fund (IMF), created by the Bretton Woods Conference in 1944, was established in 1945. It provides machinery for international consultation and collaboration on monetary, payment and exchange problems, including promotion of exchange stability, elimination of exchange restrictions, establishment of a multilateral system of current payments and expansion and balanced growth of international trade. Member countries under certain conditions may draw on the regular resources of the Fund, which now amount to some 30,000 million units in Special Drawing Rights, of which the equivalent of about 5,300 million SDRs is in gold. Members can also draw on the supplementary resources of US\$6,000 million made available in 1962 under the General Arrangements to Borrow, which have since been extended to October 1975. Canada's present subscription and quota in the IMF is 1,100 million SDRs of which 25% was paid in gold and the remainder in Canadian currency.

On January 1, 1971 a further allocation of SDRs was made to the 110 member countries participating in the Special Drawing Account. The 2,949 million unit allocation of this fiduciary reserve asset represented the second instalment of a total of 9,500 million SDRs to be created during the first three-year base period ending December 31, 1972. This allocation resulted in a 3.6% increase in the official world reserves.

Special Drawing Rights have now become established as usable and acceptable reserve assets in Fund transactions. Total transactions in SDRs in 1971 amounted to 831 million units with the General Account of the IMF acquiring about 198 million SDRs and the Special Drawing Account participants the remainder. Among the latter, Canada accounted for over 72 million units raising its total holdings to a level of 54% in excess of the cumulative amount of 242 million units allocated to it since January 1, 1970.

The Fund now has 120 members and Canada has been represented on the Fund's Executive Board since its inception.

The World Bank Group, consisting of the International Bank for Reconstruction and Development (IBRD) or World Bank, the International Finance Corporation and the International Development Association, is by far the largest of the multilateral aid-giving institutions.

The International Bank for Reconstruction and Development (World Bank), like the International Monetary Fund, originated in the Bretton Woods Conference of 1944. Its early loans were made to assist in the postwar reconstruction of Europe but it has played an increasingly important role in providing financial assistance and economic advice to the less-developed countries. It has become the world's largest multilateral source of development finance. By December 31, 1972, the Bank had made loans totalling US\$18,300 million to 90 of its 122 member countries in Central and South America, Asia, Africa and Southern Europe.

The resources available to the Bank for use in its lending operations are: that portion of its subscribed capital which is paid in by governments and freely usable (US\$2,700 million); its retained income from operations (US\$1,800 million); and the funds it is able to raise by the sale of bonds to central banks and government agencies and on private capital markets. By selling bonds and loans from its portfolio to other investors, the World Bank augments its capital. As at December 31, 1972, the Bank had outstanding borrowings of US\$7,400 million in various currencies. The World Bank's policy is to keep its lending rates as low as possible while maintaining its ability to borrow. The current lending rate is 7¼%; maturity periods on loans are usually from 15 to 30 years. In 1972, the Bank's lending level was of the order of US\$2,200 million.

Most World Bank loans are made to finance so-called infrastructure projects (roads, rails, ports, and electricity generation and transmission) which provide the framework basic to a country's economy but which generally do not attract private investors. Increasingly, however, the Bank has been giving more emphasis to other sectors such as agriculture, telecommunications, education, water supply and sewage.

Canada's subscription to the World Bank is the equivalent of \$1,022.5 million in current US dollars out of a total for all countries of US\$29,300 million. Only 10% of each subscription is paid in, however, with the balance remaining as a guarantee against which the Bank is able to sell its own bonds in world capital markets. Thus Canada's paid-in subscription is US\$102.2 million. This includes the US\$16.3 million paid-in portion which Canada subscribed to in May 1972 as part of the selective increases approved in 1970. In all, the Bank has offered nine bond issues totalling \$211 million in the Canadian market. Maturities on these bonds ranged from one to 25 years and the interest rate from 3½% to 7%.

The International Finance Corporation (IFC) was established in 1956 as an affiliate of the IBRD to assist less-developed member countries to promote the growth of the private sector of their economies. IFC's principal aims are to provide risk capital for productive private enterprises in association with private investors and management; to encourage the development of local capital markets; and to stimulate the international flow of private capital. IFC makes investments in the form of share subscriptions and long-term loans, carries out standby and underwriting arrangements and provides financial and technical assistance to privately controlled development finance companies. Of IFC's total subscribed capital of US\$107 million, Canada provided US\$3.6 million. In addition to its subscribed capital, IFC is able to finance its activities through loans from its parent institution, the World Bank. Total investments and underwriting commitments by IFC to December 31, 1972 amounted to US\$733.7 million. Commitments made during 1972 were US\$130 million.

The International Development Association (IDA), an affiliate of the IBRD, was established in 1960 to provide external resources on highly concessional terms for developing countries which could not pay conventional rates of interest on development loans. The IDA is the "soft loan window" of the World Bank Group. IDA loans are made to member governments for 50 years, at no interest, with a ten-year grace period and a service charge of less than 1%. IDA and IBRD operate with the same staff and the same standards, and projects selected must satisfy the same economic criteria regardless of whether they are financed with money on hard or soft terms or a mixture of the two. A country's economic prospects and its ability to service its foreign debt determine the type of loan it may secure.

Because of the nature of its operations, IDA obtains its resources from developed member countries in the form of interest-free subscriptions and contributions and, to a smaller extent, from a portion of World Bank profits. As at December 31, 1972, resources available to the Association totalled approximately US\$4,000 million, of which Canada contributed US\$276 million. This includes Canada's first two annual instalments of US\$54 million each, paid in November 1971 and 1972, toward IDA's Third Replenishment. Under the Third Replenishment, 21 member countries together with Switzerland agreed to make available to IDA a total of over US\$2,600 million between 1972 and 1974. By December 31, 1972, credits extended by the Association to 62 of its 111 member countries totalled about US\$4,200 million.

The International Atomic Energy Agency (IAEA) was created in 1957 as an autonomous international organization under the aegis of the UN which has empowered it to try to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world. As at August 1972, membership consisted of 103 states. Because Canada has been designated as one of the members most advanced in nuclear technology, including the production of source materials, a Canadian representative has served on the Board of Governors since the Agency's inception. Canada is the only non-nuclear weapons state to occupy a permanent seat on the Board.

Conferences and symposia, dissemination of information and provision of technical assistance are among the methods adopted to carry out the functions of the Agency. With the rapid expansion in the use of nuclear power, much activity is devoted to this field as well as to the use of isotopes in agriculture and medicine. Another significant role relates to the development and application of safeguards to ensure that nuclear materials supplied for peaceful purposes are not diverted to military uses. Under terms of the Treaty for the Non-Proliferation of Nuclear Weapons, each non-nuclear weapons state adhering to the Treaty was to conclude an agreement with the IAEA before March 5, 1972, providing for safeguards on its entire nuclear program. Agency inspectors carried out safeguards inspections in Canada and in more than 60 other countries in 1972.

4.6.2.4 Canada and the Conference of the Committee on Disarmament

The Canadian government has long placed importance on international efforts to work for a safer world through arms control and disarmament. Canada is an active member of the UN Conference of the Committee on Disarmament (CCD), a 26-nation negotiating body. This Committee, of which the United States and the Soviet Union are co-chairmen, represents in microcosm the world-wide concern to stop the arms race. The CCD is currently seeking a comprehensive prohibition of nuclear weapons testing including underground tests, and a ban on the research, development, production and stockpiling of chemical weapons.

4.6.2.5 Canada and the North Atlantic Treaty Organization

1972 was a particularly active year for the NATO Alliance in its continuing search for both military stability and political détente in Europe. As one of the founding members of the Alliance, Canada continued to play a prominent role in all its activities.

The encouraging results of the Federal Republic of Germany's *Ostpolitik* and the agreements reached between the United States and the Soviet Union on strategic arms limitation in large measure made it possible for the progress toward political détente evidenced by the initiation of two sets of East-West talks in 1972: multilateral preparatory talks for a Conference on Security and Co-operation in Europe and exploratory talks on possible future Mutual and Balanced Force Reductions in Central Europe. Full-scale international conferences on these subjects are expected to be convened during 1973. Throughout the preparation for these talks the North Atlantic Council and its committees continue to play a key role in developing and co-ordinating the views of individual NATO countries with respect to the principal problems under negotiation.

As part of its contribution to the collective defence of the Alliance, Canada continued to station land and air elements numbering some 5,000 men in the Federal Republic of Germany. In addition, Canadian naval units in the North Atlantic continued to be earmarked for assignment to the NATO Supreme Commander Atlantic in the event of an emergency. Canada also co-operates with the United States in the defence of the North American part of the Alliance. The North American Air Defence Command (NORAD) is an integrated command system combining air defence units from both countries. The Agreement setting up the Command has been extended for a further two-year period commencing May 12, 1973.

As a forum for Allied consultation, NATO is involved in other activities of a non-military nature. One major development has been the work of the NATO Committee on the Challenges of Modern Society which is concerned with exchanges of views and experiences of individual NATO countries regarding ecological and environmental problems. Canada has not only participated actively in this Committee, but is one of the leaders in projects dealing with pollution of inland and coastal waters.

4.6.2.6 Canada and the United States

Relations with the United States are of vital importance to Canada and constitute what is in many respects a unique phenomenon in international relations. Geography has made the two countries neighbours and community of interest has made them friends, while the demographic realities and economic patterns of today present Canada with the challenge of living distinct from but in harmony with the world's most powerful nation. The two countries are one another's best customer: Canada sells to the United States just less than three quarters of all exports and buys almost one quarter of all US exports in an exchange of goods that now totals close to \$23,000 million per year.

Co-operation in bilateral and multilateral affairs continues to demonstrate the shared interests of both countries. Both are active members of the UN and its many specialized agencies and both participate actively in NATO, the General Agreement on Tariffs and Trade (GATT), the Organization for Economic Co-operation and Development and other important international organizations. Many bilateral bodies also facilitate Canada - United States co-operation: the Ministerial Committee on Trade and Economic Affairs brings together members of the Cabinets of both countries for discussions on a wide range of problems of bilateral as well as international interest, while the Permanent Joint Board of Defence serves as an advisory body on North American defence; the International Joint Commission, which has dealt with the regulation of flows of boundary waters and the abatement of trans-boundary air and water pollution, is also responsible for administering the Great Lakes Water Quality Agreement; many joint committees and agencies deal with other specialized subjects.

4.6.2.7 Canada and the Commonwealth Caribbean

The current phase of Canadian relations with the Commonwealth Caribbean dates from the Commonwealth Caribbean - Canada Conference of 1966, which established the broad guidelines for developing relations between the two areas. Considerable progress has been made in implementing the recommendations agreed to at that Conference. As part of the continuing process of consultation, a special Canadian Mission to the Commonwealth Caribbean in the fall of 1970 visited 13 countries and territories to discuss specific matters of common interest.

In 1971, Canadian investment in the region was estimated at between \$450 and \$550 million. In the preceding five years more than \$100 million was allocated to the Commonwealth Caribbean under Canadian development assistance programs. More than 3,000 Canadians live as permanent residents in the region and about 175,000 visit the islands annually. During 1971, more than 12,000 West Indians immigrated to Canada. There are Canadian High Commissions in Jamaica, Trinidad and Tobago, and Guyana, and these three countries, as well as Barbados, maintain High Commissions in Ottawa. There is also a Commissioner for the Eastern Caribbean in Montreal who represents the six West Indies Associated States (Antigua, Dominica, Grenada, St. Kitts - Nevis - Anguilla, St. Lucia and St. Vincent) and Montserrat.

4.6.2.8 Canada and Latin America

Canada maintains diplomatic relations with all Latin American republics through 14 resident diplomatic or consular missions. As envisaged in the foreign policy paper on Latin America published in 1970, substantial progress has been made in developing and intensifying relations with these countries and with inter-American institutions.

In 1972, Canada became one of the first nations to be accredited as a Permanent Observer of the Organization of American States (OAS); a Canadian Permanent Observer Mission was opened in Washington under an Ambassador accredited to the OAS. Canada, which has been a member of five inter-American organizations linked with the OAS — the Pan American Institute of Geography and History, the Inter American Statistical Institute, the Inter-American Centre for Tax Administrators, the Centre for Latin American Monetary Studies and the Postal Union of the Americas and Spain — has joined three more of these institutions: the Pan American Health Organization, the Inter-American Institute of Agricultural Sciences and the Inter-American Development Bank.

The most significant Canadian commitment to the development of this region was Canada's accession to full membership in the Inter-American Development Bank in 1972. Canada has subscribed US\$242 million to the Bank's ordinary capital fund, \$40 million of it paid in and \$202 million callable. Canada is also contributing US\$60 million to the Bank's Fund for Special Operations, making a total cash contribution of US\$100 million payable over an initial period of three years. Prior to Canadian membership, the Bank had administered Canadian loans totalling \$74 million for Latin American development over a period of eight years.

Bilateral relations were also intensified with countries in the area. For example, the Canadian program of bilateral development assistance to Latin American countries, expected to amount to \$10 to \$12 million annually, progressed from the planning to the implementation stage. Those countries which most need and can most effectively utilize Canadian technical assistance are receiving a major part of available resources through sustained programs. Other countries in the region are eligible to receive assistance on an ad hoc project-by-project basis; in 1972 both Cuba and Haiti were included in this group. In order to concentrate Canadian assistance within those sectors where Canadian technical expertise is most applicable to the region's needs, emphasis has been given to projects in the fields of education, agriculture, fisheries, forestry and public administration. Aid funds are also available through Canadian non-governmental organizations engaged in developmental and humanitarian work in Latin America, and through disaster-relief organizations.

Bilateral relations with Latin American countries have broadened in a number of ways. The series of youth, cultural, scientific and technical exchanges projected at the Canada - Mexico Ministerial Committee in October 1971 has begun. New initiatives in disseminating information about Canada include the opening of a Canadian Library Centre in Mexico City. Closer consultation and liaison with Latin American countries have been cultivated on a

widening range of questions of mutual interest such as the law of the sea, environmental improvement, narcotics control, anti-hijacking measures, emergency relief and disarmament.

4.6.2.9 Canada and Europe, the Middle East, Africa, and the Far East

Canada and Europe. Canada's relations with Western Europe have developed steadily under the impulse of major Canadian interests in the area. These countries have long been major trading partners for Canada and as a result of its growing prosperity and unity, Western Europe is likely to assume even greater importance for this country. Canada maintains close bilateral relations with Britain and France in particular, as well as with most other Western European countries, and has resident diplomatic missions in almost all of them. Canada is also, along with a number of Western European countries, an active member of NATO, OECD and wider international associations such as GATT. In view of the increasing economic and political importance that the Common Market is assuming for Canada, the Canadian government has been discussing with European Economic Community (EEC) member countries means of strengthening its economic relations through co-operation with the EEC in the field of industrial development.

Canada has a substantial interest in developing better relations with Eastern Europe. Increased trade, scientific and technological co-operation and cultural exchanges, and a strengthening détente in Europe have all been factors in this new situation. An important step toward détente was taken in November 1972 with the opening of talks in Helsinki preparatory to a Conference on Security and Co-operation in Europe.

A new era in Canadian - Soviet relations, based on a more candid and friendly atmosphere and on the principle of mutual benefit, was opened in 1971 with the signing of the Protocol on Consultations, the Industrial Exchanges Agreement and the General Exchanges Agreement, and expanded further in 1972-73 when they were implemented. These provide for regular and long-term co-operation between Canada and the USSR. At the same time, Canada has been pursuing improved relations with other East European countries in the hope of arranging similar mutually advantageous agreements. At present, Canada has resident diplomatic missions in Moscow, Prague, Warsaw, Belgrade and Budapest and maintains diplomatic relations with Romania and Bulgaria through non-resident Ambassadors.

Canada and the Middle East. Bilaterally, Canada enjoys cordial and increasingly important relations with most countries in the Middle East. For the past quarter-century, however, the area has been a focus of tension and conflict. During this period, Canada has participated in United Nations efforts to bring about an equitable and lasting settlement of the dispute between Arabs and Israelis and has made substantial contributions to measures designed to alleviate want among the victims of recurring hostilities.

Canada provided observers to the United Nations Truce Supervision Organization (UNTSO) and was closely associated with the formation of the United Nations Emergency Force (UNEF). Canadian troops served with UNEF in Gaza and Sinai from its creation until its withdrawal in May 1967. Canadian officers are still serving with UNTSO, set up to supervise the Arab-Israeli cease-fire in 1967.

Since the United Nations Relief and Works Agency for Palestinian refugees was established, Canada has contributed cash, food and other supplies to it. In emergency situations various forms of assistance have also been provided through the International Red Cross.

Canada and Africa. Direct relations were first established with former British colonies in Africa as they became independent members of the Commonwealth. Increasing contacts and diplomatic relations with the newly independent French-speaking African states soon followed as a result of the increasing emphasis which the Canadian government placed on French culture in this country as well as the important role played by francophone African countries in their continental affairs. Canada now maintains diplomatic relations with almost all the independent African states and through resident Canadian missions in 14 countries. The development of bilateral diplomatic and commercial relations has been accompanied by a significant and growing program of Canadian aid to Africa. More than \$107 million in aid funds was directed to the African continent in 1971-72 and a further \$129 million has been committed for 1972-73.

Canada and the Far East. For many years Canada has had important links, both official and private, with a number of states in Asia. These contacts were once restricted to a small group of Canadians and were limited in scope but during the past decade Canadians have become increasingly aware of their position as a Pacific as well as an Atlantic nation. At present Canada maintains diplomatic relations with 20 countries in Asia and has resident diplomatic missions in 13 countries.

Although some links had developed as a result of historic and traditional ties, as in the case of Australia and New Zealand, many of the new contacts were originally economic in character, resulting from increased trade and the provision of development assistance. The importance of Asia as a trading area is evident from Japan's emergence as Canada's third largest trading partner. Canada's Trade Fair in Peking in August 1972 and its participation in the Third Asian Trade Fair in New Delhi in October-November 1972 lend emphasis to this country's recognition of Asia's potential.

Relations with the countries of the Pacific Rim are increasing in importance as both the Pacific section of the government's 1970 foreign policy review and the growing number of meetings between Canadian Ministers and officials and their counterparts in other countries indicate. The long-term objectives of co-operation and development are fundamental to the future growth and stability of the region. Participation in the Colombo Plan, membership in the Asian Development Bank and Canada's official observer status with the Economic Commission for Asia and the Far East reflect this country's interest in having those aims achieved. A significant proportion of Canada's total assistance has been allotted to the developing countries of Asia and the government has expressed its readiness to contribute to the postwar economic rehabilitation of Viet-Nam and of the other countries of Indo-China. Canada has participated in various United Nations efforts to restore peace in Asia including UN operations in South Asia and in Korea. As a member of the original International Commission for Supervision and Control in Indo-China, Canada still maintains delegations in Viet-Nam and Laos and this aspect of its involvement in Asia has been further reinforced by participation in the newly established control commission.

Canada and the Asian Development Bank. Canada is a member of the Asian Development Bank, established in 1966 with Articles of Agreement patterned broadly after those of the World Bank and other international financial institutions. The Bank's subscribed capital stock is US(1966)\$1,005.4 million of which one half was paid in over the five-year period 1966-70. The balance of member-country subscriptions remains as a callable guarantee against which the Bank may sell its bonds on world capital markets. Asian regional countries, including Japan, Australia and New Zealand, have subscribed US\$625.4 million and non-regional countries have subscribed the remaining US\$380 million. Canada has paid US\$12.5 million to cover the paid-in portion of its original subscription of US\$25 million. The Bank approved a 150% increase in authorized capital stock in November 1972 of which Canada's share will be US\$37.5 million with 20% the paid-in portion.

For its ordinary operations which are financed from paid-in equity capital or any resources raised on world capital markets, the Bank expects to follow a pattern similar to that of the World Bank lending at rates of interest sufficient to maintain its own capacity to borrow. As at December 1972, the lending rate was 7½% and the Bank had made available 74 loans totalling US\$767.5 million from these ordinary resources.

The Bank also established Special Funds available to member countries on more flexible terms. Such special operations are financed by voluntary contributions and kept separate and distinct from the Bank's ordinary capital resources; Canada has made US\$25 million available for the Bank's special operations. As at December 1972, the Bank had supplied 44 loans totalling US\$201.5 million from these Special Funds to developing member countries of the region.

4.6.2.10 Canada and the OECD

The Organization for Economic Co-operation and Development (OECD) was established in September 1961, as successor to the Organization for European Economic Co-operation founded in 1948 by the countries of Western Europe to facilitate reconstruction of their war-shattered economies. With the OECD's establishment, Canada and the United States and later Japan (May 1964) and Australia (June 1971) joined with the countries of Western Europe to form what is today a major, intergovernmental forum for consultation and

co-operation among the advanced industrialized nations in virtually every major field of economic activity. At present, 23 countries are full members of the Organization, while Yugoslavia has a special status entitling it to participate in certain activities. The Organization's headquarters is in Paris.

The aim of the OECD is to facilitate the formulation of policy approaches which are conducive to balanced economic growth and social progress of both member and non-member countries. The Organization provides an instrument for assembling and examining knowledge relevant to policy-making and also a forum, meeting the year round, for the exchange and analysis of ideas and experiences from all member countries.

The Organization plays a significant role in harmonizing international economic and financial policy and is the main area where industrialized nations may hold consultations on questions of development assistance. The original focus of the OECD on more traditional economic, trade and development matters has altered and new activities have been undertaken in the areas of agriculture, the environment, industry, science and technology, and manpower policy. This broader orientation places increasing emphasis on the qualitative, as well as the quantitative, aspects of economic growth and is most recently seen in the Organization's work on the problems of environment and welfare in the context of economic policy. At the first Ministerial Council in 1961, member countries approved a growth target of 50% for the decade to 1970; that goal was considerably exceeded.

The OECD brings together government officials, representatives of private business, labour unions, universities and other non-governmental bodies in both deliberative and consultative capacities, at the international level. Within Canada, the Canadian Business and Industry Advisory Committee, comprising representatives of the Canadian Chamber of Commerce, the Canadian Council of the International Chamber of Commerce and the Canadian Manufacturers' Association was established in 1962 to ensure input from the business community. Arrangements also exist for consultation with Canadian labour organizations, universities and other non-governmental bodies. Representatives of provincial governments frequently attend OECD meetings when subjects of particular interest to the provinces are being discussed.

4.6.2.11 Canadian development assistance programs

The Canadian International Development Agency (CIDA) is responsible for the operation and administration of Canada's international development assistance programs. In 1972-73 Canada allocated \$491 million to development aid, compared to \$431.2 million in 1971-72. Of the 1972-73 budget, \$333.3 million was allocated to bilateral economic assistance programs, and \$131.9 million to multilateral programs in support of the United Nations, development banks and other institutions. Bilateral program allocations comprised \$46 million in technical assistance, \$195.8 million in economic assistance and \$91.5 million in international food aid. Under the bilateral program, grants and loans were almost equally divided. Most loans are for 50 years with no interest and no repayment required for the first ten years. Bilateral aid is usually tied to purchase of Canadian goods and services; however, 20% of the total may be spent outside Canada and a further portion (about 15%) may be used to pay shipping costs. During 1971, approximately 2,600 students and trainees from developing countries studied in Canada under CIDA programs. About 860 Canadian educators and 250 Canadian experts worked abroad on various professional and technical jobs. Under a unique feature of Canada's technical training program, 157 foreign students studied in "third countries" (i.e., countries other than Canada or their own).

In 1972-73, Canada supported Canadian private voluntary organizations engaged in international development programs and in development education with contributions of \$16.5 million which generated some \$45 million in financial and human resources. Of the \$10 million allocated to research into the problems of underdevelopment, \$8 million went to the International Development Research Centre. Canada's interest in regional financial institutions was confirmed in 1972 when Canada joined the Inter-American Development Bank and played a major part in establishing a special fund for the African Development Bank, to provide funds on concessional terms to African members.

The International Development Research Centre is an international organization, supported financially by Canada. Established in 1970 to initiate and encourage research focused on the problems of the world's developing regions, it fosters co-operation between the developed and

the developing world. In its role as co-ordinator of international development research, the Centre enlists the talents of natural and social scientists and technologists of both Canada and other countries. It also assists developing regions to build up the research capabilities, innovative skills and institutions required to solve their own problems. The Centre also offers research grants to PhD candidates and mid-career practitioners who are Canadian citizens or residents with three years landed-immigrant status.

Operations of the Centre are conducted under four program divisions: Agriculture, Food and Nutrition Sciences; Information Sciences; Population and Health Sciences; and Social Sciences and Human Resources. As at December 31, 1972 the Centre had approved 81 projects worth \$11 million involving 74 grantees in 60 countries. Most of the research activities and related seminars were conducted in developing countries by their research organizations.

The Canadian government gave the Centre \$2.4 million in 1970-71, \$2.5 million in 1971-72 and \$8 million in 1972-73.

Asia assistance program. Canada's development assistance program in South and Southeast Asia — the Colombo Plan — is the longest established (1950) regional bilateral aid program administered by CIDA, and also the largest in volume, with an allocation of \$153.4 million in 1972-73, compared to \$143.4 million in 1971-72. Despite this increase, the size of the populations of Asia results in a much smaller impact in terms of per capita receipts than is the case of aid from Canada to areas such as the Caribbean or parts of Africa.

Since 1950 Canada has provided more than \$1,660 million through its bilateral aid program in Asia, the greater share directed to Bangladesh, India, Indonesia, Pakistan and Sri Lanka (Ceylon). In recent years the nature of Canada's program in South and Southeast Asia has changed considerably. To improve its over-all effectiveness, multi-component projects are being developed. Capital assistance, in the form of loans and grants, is provided in specific economic sectors identified by the recipient countries as their development priorities in fields such as communications, transport, electric power development, agriculture, fisheries, mining, lumbering, medicine and public health.

Greater emphasis is being placed on commodity loan programs for some recipient countries such as the \$50 million allocated to India. Usually commodity aid consists of raw materials such as aluminum, lead, copper, asbestos, wood pulp or some semi-processed materials. Grants for foodstuffs also form an integral part of Canadian aid in South and Southeast Asia. The main items are cereal grains and rapeseed but others may be included under CIDA's emergency relief program. Through internal sale of these commodities recipient countries have been able to raise funds to meet local costs of development projects.

Canada's lines of credit program is another departure from traditional aid operations. Designed to help overcome problems of foreign exchange in developing countries, this program provides goods and services that are priority import requirements but difficult to obtain through regular financing arrangements. India and Indonesia have signed lines of credit agreements with Canada and other countries are discussing similar arrangements.

Canada is taking an active part in rehabilitation and reconstruction programs through its development assistance to Bangladesh. In 1972-73, \$51.5 million was allocated for Canadian-assisted projects and food aid.

Technical assistance represents another aspect of Canadian aid in Asia. More than 5,500 Asian people have had training in Canada in public administration, finance, agriculture, fisheries, forestry, engineering, business administration, medicine, health, education or social welfare. At the same time more than 650 Canadian experts have gone to South and Southeast Asia to provide technical assistance. As at January 1, 1972 there were 15 Canadian advisers and 40 Canadian educators serving under CIDA contracts in Asia. More than 440 trainees from developing countries in Asia were in Canada under CIDA auspices.

Latin American program. Although Canada has participated in the United Nations and World Bank programs in Latin America since their inception, Canadian development assistance really started in 1964 when Canada entrusted the Inter-American Development Bank (IDB) with a special fund, to be used for loans on concessional terms to member countries. The first allocation was for \$10 million. With subsequent annual allocations Canada had contributed over \$74 million by January 1972. All projects to be financed from the fund were suggested by the recipient countries, assessed by the IDB and approved by CIDA. Eighteen loans were made to finance projects in transportation, telecommunications, electric power, agriculture,

forestry and education. Colombia received \$16.7 million for power facilities on the Alto Anchicaya River, the largest hydro-electric project undertaken in Latin America. The fund was closed in May 1972 when Canada became a full member of the IDB. Loan repayments now revert to the Bank. Over the next three years Canada will contribute US\$100 million to the IDB.

In 1971 CIDA launched a program of bilateral technical assistance concentrated on Latin American agriculture, forestry, fisheries, education and community development. The first-year allocation was \$9.5 million and 40 projects had been approved by the end of 1972. During 1971-72 CIDA also contributed over \$1 million toward 86 projects undertaken by Canadian non-governmental organizations, at a total cost of \$2.9 million.

Francophone Africa assistance program. Since Canada first sent teachers to the French-speaking countries of Africa in 1961, the francophone Africa assistance program has grown into a substantial commitment, involving allocations of \$68.9 million to 21 countries in 1972-73. Important projects include the establishment of a business institute (INPE-HEC) in Algeria and a technical school (École polytechnique de Thiès) in Senegal, regional development schemes in Tunisia and Morocco, a public health program in Cameroon, forestry assistance in Congo (Kinshasa), the Unity Road highway in Niger, and rural electrification in Ivory Coast. In January 1972, 83 Canadian advisers and 489 teachers served in francophone Africa, and 486 trainees studied in Canada.

The Special Commonwealth Africa Assistance Plan resulted from discussions at the 1960 Commonwealth Prime Ministers meeting. Canadian assistance to Commonwealth Africa has grown steadily from an initial provision for technical and educational assistance to include a variety of capital projects and pre-investment surveys. Undertakings in the fields of energy, transportation, communications, agriculture and economic planning in the developing countries of eastern and southern Africa have balanced the original focus on West Africa. From 1960 to March 1973, Canada contributed \$264 million to bilateral development programs. In 1972-73 Canada allocated \$48.8 million to Commonwealth Africa plus \$10 million to Nigeria for locomotives. Technical assistance in January 1972 involved 352 Canadian advisers and educators in Commonwealth Africa under CIDA contracts and 383 trainees in Canada. The Volta River hydro-electric program in Ghana, telecommunications, transportation and school construction projects in Nigeria, harbour expansion and modernization in Tanzania and Kenya, a new water supply system for Dar es Salaam in Tanzania, a power generating project in Botswana, resource surveys in Kenya, and technical/vocational education in Zambia are among the large assistance programs under way.

Commonwealth Caribbean program. After the Federation of the West Indies was dissolved in 1962, Canada continued the program of economic and technical assistance started in 1958 when the Federation was set up. Under the program the Commonwealth Caribbean has received more Canadian development assistance per capita than any other region of the world. Canada's bilateral allocations of almost \$165 million since 1964, including \$19.1 million in 1972-73, have facilitated a variety of undertakings: bridges, water systems, hospital equipment and an island-wide transportation survey in Jamaica; an aerial survey, hospital equipment and a continuing program of rural electrification in Trinidad and Tobago; a water system, ground transportation studies, an aeromagnetic survey and two mapping programs, four aircraft, a hangar, radio and air navigation equipment and other assistance to civil aviation in Guyana; a promising animal-feed-from-sugar-cane experiment and an ambitious waterworks program in Barbados; six waterworks programs, four airport improvement schemes and a study of the banana industry on the Leeward and Windward Islands; forest fire-fighting equipment, an airport control tower and several technical assistance projects in Belize; new schools throughout the region; and buildings for the University of the West Indies on several islands. Further technical assistance included 319 Caribbean trainees studying agriculture, engineering, fisheries, forestry and medicine in Canada and 164 Canadian teachers and advisers working in the Commonwealth Caribbean in January 1972.

The Commonwealth Scholarship and Fellowship Plan, established in 1958 to give promising Commonwealth students the opportunity to study in other member countries, was designed to enrich the intellectual life of the participating countries and to promote equality of educational

opportunity at the highest level. Britain provides half the annual 1,000 scholarships and Canada a quarter. Since 1969 the Association of Universities and Colleges of Canada has administered the Plan although CIDA provides the funds. In January 1973, 227 students were on scholarship and actual expenditures were \$1.4 million.

In 1965 Canada introduced Research and Visiting Fellowships as part of the Canadian contribution to this Plan. Senior educators from other Commonwealth countries are invited to visit Canadian universities and educational institutions to carry out research in their particular field.

Commonwealth Fund for Technical Co-operation. Established in April 1971 following a Commonwealth Heads of Government Conference and administered by the Commonwealth Secretariat, this Fund is designed to provide Commonwealth countries with multilateral aid in the form of advisory services in economic planning and related fields. A further objective is to organize the third country training scheme which gives students the opportunity to study in other parts of the Commonwealth. Britain and Canada are major supporters of the Fund; Canada contributed \$350,000 in 1971-72.

Co-operation with the United Nations and international aid programs. In addition to the annual contributions to the United Nations Development Programme, encompassing all UN technical assistance programs, Canada arranges training programs for individuals studying here under the auspices of different UN specialized agencies. Canada also recruits Canadians to work for the agencies at their headquarters or in developing countries on specific assignments. Canadian allocations to multilateral organizations — including UN agencies, the World Bank and regional development banks — amounted to \$96.4 million in 1971-72 and will exceed \$131.9 million in 1972-73, for a total of about \$700 million since 1951.

4.7 Defence

4.7.1 The Department of National Defence

The Department of National Defence was created by the National Defence Act, 1922, which established one civil department of government in place of the previous Departments of Militia and Defence, Naval Service and the Air Board, and now operates under authority of RSC 1970, c.N-4.

The Minister of National Defence has the control and management of the Canadian Forces, the Defence Research Board and all matters relating to national defence establishments and works for the defence of Canada. He is also responsible for the Canada Emergency Measures Organization and for certain civil emergency powers, duties and functions as outlined in Order in Council PC 1965-1041, dated June 8, 1965, as amended. In addition, he is responsible for presenting before the Cabinet matters of major defence policy for which Cabinet direction is required.

The Deputy Minister administers the Department and maintains a continuing review of and control over the formulation of policy with respect to resources. Each of five Assistant Deputy Ministers administers a Group responsible for policy, finance, personnel, materiel and evaluation. Also responsible to the Deputy Minister are the Chief of Program, Judge Advocate General, Director General Information, Director General Departmental Administrative Services, and the National Co-ordinator of the Canada Emergency Measures Organization.

The Chief of the Defence Staff controls and manages the Canadian Forces and is responsible for maintaining an effective military force to meet defence objectives. The Vice Chief of Defence Staff and the Deputy Chief of Defence Staff are responsible to the Chief of the Defence Staff.

The Chairman of the Defence Research Board provides scientific advice and conducts and/or supports research projects related to national defence.

The Defence Council meets at regular intervals to provide a channel of communication between the Minister and the senior officials of the Department through briefings, the exchange of views on policy matters, and discussions of specific matters requiring the approval, decision and/or direction of the Minister.

The Defence Management Committee considers all major and significant matters of policy, plans, programs and administration requiring the decision and direction of the Deputy Minister, the Chief of the Defence Staff and/or the Chairman of the Defence Research Board prior to their submission to the Minister as required.

The Minister of National Defence is responsible for administering the following laws which relate to the Department of National Defence: National Defence Act (RSC 1970, c.N-4), Defence Services Pension Continuation Act (RSC 1970, c.D-3), Canadian Forces Superannuation Act (RSC 1970, c.C-9) and Visiting Forces Act (RSC 1970, c.V-6).

Liaison in other countries. The Chief of the Defence Staff, who is the Canadian Military Representative to the North Atlantic Treaty Organization, is responsible for advice on all NATO military matters and acts as a military adviser to the government and to Canadian delegations to NATO. For purposes of liaison and the furtherance of international co-operation in defence, Canada also maintains: the Canadian Defence Liaison Staff London, representing the Canadian Armed Forces and the Defence Research Board in Britain, the Commander of which is the principal military adviser to the Canadian High Commission in London; the Canadian Defence Liaison Staff Washington, representing the Canadian Armed Forces and the Defence Research Board in the United States, the Commander of which is the principal military adviser to the Canadian Ambassador in Washington, and is the Canadian National Liaison Representative to the Supreme Commander, Allied Command Atlantic (SACLANT) Headquarters; two logistic liaison units also located in the United States; in Brussels, a Canadian member of the NATO Military Committee in Permanent Session, a Military Adviser to the Canadian Permanent Representative to the North Atlantic Council and also a Canadian National Military Representative to Supreme Headquarters Allied Powers Europe (SHAPE); and Canadian Forces Attachés in various countries throughout the world. In addition, a number of defence matters of concern to both Canada and the United States are considered by the Permanent Joint Board on Defence, which provides advice on such matters to the respective governments.

4.7.2 The command structure of the Canadian Forces

The Canadian Forces are organized on a functional basis to reflect the major commitments assigned by the government. Under this concept, all forces devoted to a primary mission are grouped under a single commander who is assigned sufficient resources to discharge his responsibilities. Specifically, the Canadian Forces are formed into National Defence Headquarters and seven major Commands reporting to the Chief of the Defence Staff.

Mobile Command. The role of Mobile Command is: to provide military units, including tactical air support, suitably trained and equipped, for the protection of Canadian territory; to maintain operational readiness of combat formations in Canada required for overseas commitments; and to support United Nations or other peacekeeping operations.

The forces assigned include: three airportable combat groups in Canada; the Canadian Airborne Regiment; the Canadian Contingent of the United Nations Force in Cyprus; two tactical fighter squadrons; four tactical helicopter squadrons and one helicopter operational training squadron; one transport helicopter squadron; and one combat training centre.

The Militia and Air Reserve components are also controlled and administered by Mobile Command.

The Militia. The Militia is assigned its traditional role as a sub-component in support of the Regular Force. Under the present organization, units of the Militia have been placed under either the Commander, Mobile Command or Canadian Forces Communication Command.

Mobile Command exercises command and control of 121 Militia combat and service units through five Militia Area Headquarters and 21 Militia Districts in the following centres: Esquimalt, Vancouver and Victoria; Edmonton, Southern Alberta, Saskatchewan and Winnipeg; Hamilton, London, North Bay, Ottawa, Toronto and Windsor; Montreal and Quebec; and West Nova Scotia, Cape Breton, West New Brunswick, East New Brunswick, Prince Edward Island and Newfoundland. Mobile Command Militia is charged with: providing trained individuals for augmentation and reinforcement of the Regular Force; providing trained sub-units to support the field force for the defence of Canada and the maintenance of internal security; providing trained personnel for the augmentation of the civil emergency operations organization; and forming the base on which the Regular Force could be expanded in the event of an emergency.

The 12 Canadian Forces Communication Command Militia Units are commanded and controlled through the five Regular Force Communication Groups and are centred in:

Vancouver, Edmonton and Calgary; Regina and Winnipeg; Toronto and Ottawa; Montreal and Quebec; and Saint John, Halifax and Charlottetown. Their tasks collectively include: the augmentation of Canadian Forces Communication Command in an emergency; the provision of communication support to Mobile Command Militia in emergency operations (peace); the provision of instructors for the training of Mobile Command unit signalers; and the provision of communications support for control of Mobile Command Militia tactical exercises.

Air Reserves. The Air Reserve is organized into four Air Reserve Regional Headquarters at Montreal, Toronto, Winnipeg, and Edmonton and six flying squadrons of six DHC Otter aircraft each. Air Reserve Squadrons are located at Montreal (two), Toronto (two), Winnipeg (one) and Edmonton (one). The Air Reserve is required to provide light tactical air transport support to the Regular Force and in particular to Mobile Command ground forces. Air Reserve tasks include logistic airlift, air evacuation of patients, aerial surveillance and photography, and communications and liaison.

Maritime Command. All Canadian Maritime Forces, both sea and air, are under the command of the Commander, Maritime Command whose Headquarters is in Halifax. The Deputy Commander is the Commander, Maritime Forces Pacific with Headquarters in Esquimalt. The role of Maritime Command is to defend Canadian interests from assault by sea and to support measures to protect Canadian sovereignty. Support is provided to NATO by assisting in conducting anti-submarine warfare in the Allied Command, Atlantic. The Commander, Maritime Command is the NATO Commander of the Canadian Atlantic Sub-Area of the Western Atlantic Command, under the Supreme Commander, Allied Command Atlantic (SACLANT). Additional roles are to provide sea lift required by Mobile Command, and to conduct search and rescue operations within the Atlantic and Pacific Search and Rescue Areas (roughly, the Atlantic Provinces and British Columbia).

As at December 1972, the following vessels were in service in Maritime Command: 23 Destroyer Escorts/Destroyer Escorts Helicopter Equipped including three new Iroquois Class Helicopter Destroyers; three Operational Support Ships; three Oberon Class Submarines; one Tench Class Submarine; six Bay Class Coastal Patrol Vessels (employed as training vessels); and two Escort Repair Vessels (retained in service as alongside workshops and temporary accommodation vessels). One Iroquois Class Helicopter Destroyer in the final stages of construction is expected to join the fleet in 1973.

The Naval Reserve is an essential component of Maritime Command, and has been designated as a ready reserve. Its primary function is to provide trained personnel to augment the fleet in time of emergency. Another essential role is to provide and maintain naval control of shipping and protection of fishing vessels capability in time of emergency or war to meet national and NATO requirements. There are 16 naval reserve units situated in major Canadian cities.

Air Defence Command. Air Defence Command participates with the United States in the air defence of North America, through NORAD. It has command of three interceptor squadrons, one SAGE control centre, two BUIIC centres and two transcontinental radar lines. Operational control of NORAD assigned forces is exercised by HQ NORAD.

Air Transport Command. The main role of Air Transport Command (ATC) is to maintain an operationally effective air transport force to meet Canada's defence commitments. In addition to this main role, ATC is responsible for functional and administrative control of all primary search and rescue (SAR) units in Canada as well as the operational control of SAR activities in the Eastern Search and Rescue Area. It has four squadrons operating medium- and long-range cargo and troop carrying aircraft as well as four transport and rescue squadrons.

Training Command. The role of Training Command is to provide individual training for the Canadian Forces and to conduct search and rescue operations within the Western Search and Rescue Area (roughly, Manitoba, Saskatchewan and Alberta). All former training units of the RCN, the Canadian Army and the RCAF where individual training is carried out have been placed under functional control of Training Command. The Canadian Military Colleges (Royal Military College, Royal Roads and Collège militaire royal de Saint-Jean), the Staff Colleges and National Defence College are under the direct control of National Defence Headquarters. Land/air warfare operational training and basic parachutist training are the responsibility of Mobile Command; basic fixed-wing and helicopter pilot training are a Training Command responsibility.

The Canadian Forces Communication Command (CFCC). The CFCC commands all fixed communications installations within Canada which provide communications for the command and control of the Canadian Forces and for the support of emergency government.

Canadian Forces Europe. The Canadian Forces allocated to support NATO in Europe are part of Canadian Forces Europe. The land element is No. 4 Canadian Mechanized Battle Group operationally responsible to the Central Army Group. The air element, No. 1 Canadian Air Group, consisting of three CF-104 Starfighter squadrons, is operationally assigned to No. 4 Allied Tactical Air Force. These elements are located in the Baden-Baden area of the Federal Republic of Germany and are supported administratively by CFB Europe at Lahr.

Administration of military bases in Canada. Staffs and services required below Command Headquarters level to administer and support units based in a particular locality have been organized on Canadian Forces bases. The primary role of each base is to provide base-level administration and supporting services to those units located on or near the base. Each base has been allocated to a functional Commander, to whom the base Commander reports.

Function/regional organization. Functional Commanders have been assigned a regional as well as a functional responsibility for such actions as representation to provincial governments, aid of the Civil Power, emergency and survival operations, and administration of cadets, as well as regional support services for all units in the region.

Canada has been divided into six regions, five of which have been assigned to functional Commanders as follows: Atlantic (Newfoundland, Nova Scotia, Prince Edward Island, New Brunswick) — Maritime Command; Eastern (Quebec) — Mobile Command; Central (Ontario) — Air Transport Command; Prairie (Manitoba, Saskatchewan, Alberta) — Training Command; and Pacific (British Columbia) — Maritime Forces Pacific. One region, comprising the Yukon Territory and Northwest Territories, has been assigned to Commander Northern Region with Headquarters in Yellowknife, NWT who also exercises a co-ordinating function for all military activities in the region.

4.7.3 Operations in 1972

Maritime air, surface and sub-surface forces participated in three NATO exercises carried out in the North Atlantic and in combined exercises with forces from New Zealand, Australia, Britain and the United States on both the Pacific and Atlantic coasts. Training exercises were conducted in the Bermuda, Caribbean and Southern California areas in order to maintain the Maritime Forces at an operational level. In addition, an exercise was held in the Arctic to assess capabilities in northern waters. One destroyer was assigned to the NATO Standing Naval Force Atlantic for a period of five months.

Argus aircraft from both east and west coast squadrons maintained daily long-range patrols and surveillance of ocean areas adjacent to the Canadian coastline and in the Arctic; many hours were also flown on search and rescue missions. Shore-based Tracker aircraft flew similar missions, concentrating on coastal patrols, fisheries protection and pollution prevention. Between exercises, ships made goodwill visits to the United States, Britain, the Netherlands, France, Spain, Australia, New Zealand, Fiji, Samoa, Tonga, Tahiti, the West Indies and Greenland. Argus crews conducted exchange visits with United States, Britain and France.

In fulfilment of obligations under NATO, Canada continued to provide ground forces for the defence of Western Europe. In September a 3 RCR Battalion Group took part in exercise Strong Express, one of the largest exercises ever conducted by NATO. This exercise included deployment by air to northern Norway and redeployment to Canada by air and sea.

To exercise Canadian sovereignty and to familiarize the maximum number of troops with the problems of living, moving and fighting in the North, exercise New Viking continued to be the Command's most important northern exercise. From advanced bases in Churchill and Resolute Bay forces were deployed to forward patrol bases in all parts of the Canadian archipelago.

In addition, the Canadian Airborne Regiment which is the Command's quick reaction force for both defence of Canada and international peacekeeping operations, exercised in the Fort St. John area of British Columbia in January and trained in Jamaica from mid-March to the end of April.

The Canadian Forces continued to provide support for United Nations operations. Canadian participation in the UN forces in Cyprus included provision of a reduced Infantry

Battalion, a Canadian Contingent Headquarters and a Canadian element in the UN headquarters — a total of 589 officers and men. There were also 39 officers and men employed on other UN missions in the Middle East, Kashmir and Korea.

In addition to its UN commitments, Canada had six officers and men participating in the International Commissions for Supervision and Control in Viet-Nam, Khmer Republic (Cambodia) and Laos. The Commission in Khmer Republic adjourned sine die on December 31, 1969 and the delegation subsequently withdrew.

In late 1971, the three CF-104 squadrons which comprise No. 1 Canadian Air Group, Canada's NATO air contribution to Europe, terminated the nuclear role and undertook the conventional role of support of Allied Forces in Central Europe. The CF-5s continued air support operations in co-operation with land forces which are engaged in Defence of Canada Exercises aimed at improving the Canadian Forces capability of operating effectively in the Canadian Arctic.

Air Transport Command provides the airlift needed to meet national and international emergencies that require military participation. It also provides search and rescue services for aircraft to meet Canada's obligations under the terms of membership in the International Civil Aviation Organization, and it co-ordinates marine search and rescue operations within Canada's areas of responsibility.

In 1972, strategic and tactical airlift by Command aircraft enabled other elements of the forces to participate in a wide range of national and international responsibilities embracing national sovereignty and development, North American defence, NATO, humanitarian missions and contributions to world peace and security.

About half of the Command's flying is devoted to joint exercises with Mobile Command and other Canadian Forces Commands, often in conjunction with NATO allies. The remainder is used to support Canadian Forces Europe, isolated bases in northern Canada, Canadian military and civil missions abroad, and DND and other government agencies in Canada. These operations and exercises provide the experience the Command needs to maintain readiness for its emergency tasks. During 1972, a total of almost 490,000 military passengers and 56 million pounds of cargo were airlifted.

In accordance with obligations embodied in the National Defence Act and departmental policy, the Canadian Forces in 1972 provided assistance in response to requests from various civil authorities. Major undertakings were: assistance to the Ministry of Transport during the clean-up of the oil spill resulting from the grounding of the SS *Vanlene* in Barkley Sound, off Vancouver Island, in March 1972; assistance to the Ontario Ministry of Transport and Communications, by constructing a twin Bailey Bridge on Highway 17 near Petawawa in May 1972; assistance to Alberta in fighting forest fires during June 1972, and to Nova Scotia in forest fire-fighting during May and June 1972; assistance to the Department of the Solicitor General, which assisted the Ontario Provincial Police in a search for 14 escapees from Millhaven Federal Penitentiary in July 1972; across Canada from 25 locations, Canadian Forces Explosive Ordnance Disposal Teams responded to an average of 47 requests per month from police agencies to assist in rendering safe a great variety of explosives and explosive devices; and assistance to the Department of Manpower and Immigration from September to November 1972, when 4,420 Ugandan Asians immigrated to Canada on an emergency basis. Assistance consisted of 12 medical technicians who were employed in the processing of applicants in Kampala, and the provision of reception facilities for the immigrants at Longue Pointe Barracks, Montreal.

4.7.4 Training

All recruit and most basic and advanced trades training in support of the Canadian Armed Forces takes place at various schools under the supervision of Training Command. Maritime Command and Mobile Command maintain functional control of trades and operational training for their personnel.

The Combat Arms School of the Combat Training Centre, CFB Gagetown, NB, conducts training for officers and men of the armoured, artillery and infantry units of the Regular and Reserve Forces, ranging from basic trades to advanced courses. Similar courses for French-speaking personnel are given at the Combat Arms School Detachment, CFB Valcartier, Que. Training for field engineers and construction trades is given at CFB Chilliwack, BC.

Recruit training takes place at CFB Cornwallis, NS, for English-speaking recruits and at CFB Saint-Jean, Que., for French-speaking recruits. Basic technical training in French is given also at CFB Saint-Jean, Que. and an expanding trades-training program in that language is given at most bases and schools.

Saint-Jean is also the site of the English-French Language School although the official languages are taught on a limited scale at selected Canadian Forces Bases, and in civilian centres under the auspices of the Public Service Commission. Training in other languages is given at the Canadian Forces Foreign Language School in Vanier, Ont.

Support trades training is conducted at the School of Administration and Logistics, CFB Borden, Ont., and technical trades training is conducted at a number of bases across Canada. Two Fleet Schools, one at CFB Esquimalt, BC, and the other at CFB Halifax, NS, provide basic and advanced Maritime trades training and have training facilities for the operational warships on the east and west coasts.

Flying training to "wings" standard is based in the Prairie Provinces – pilot selection and basic helicopter flying training at Portage la Prairie, Man., basic fixed-wing flying training at Moose Jaw, Sask., and advanced flying training at CFB Cold Lake, Alta. Navigator and observer training are given at CFB Winnipeg, Man. The operational Commands maintain operational flying training units, and technical training units to give equipment-oriented training to tradesmen in these Commands.

Canadian Military Colleges. The three Canadian Military Colleges are the Royal Military College of Canada, founded at Kingston, Ont., in 1876; Royal Roads Military College, established in 1941 near Victoria, BC; and Collège militaire royal de Saint-Jean, established at Saint-Jean, Que., in 1952, primarily to meet the needs of French-speaking cadets. In 1959, the Ontario Legislature granted the Royal Military College a charter empowering it to grant degrees. In 1967, the Canadian Services Colleges, as they were then known, were re-designated as the Canadian Military Colleges.

The role of the Colleges is to educate and train officer cadets and commissioned officers for a career of effective service in the Canadian Forces. Courses of instruction are designed to develop character and to provide a balanced liberal, scientific and military education leading to degrees in arts, science and engineering. The Royal Military College of Canada accepts senior matriculants and offers a four-year course. Royal Roads Military College accepts senior matriculants who, on successful completion of the second year, go to Collège militaire royal de Saint-Jean or to the Royal Military College of Canada for their third and fourth years. Collège militaire royal de Saint-Jean accepts junior and senior matriculants to pursue a five- or four-year program; the final two years in some disciplines are completed at the Royal Military College.

During the 1972-73 academic year, 1,217 officer cadets were enrolled at the Canadian Military Colleges, 570 of them at the Royal Military College, 218 at Royal Roads Military College and 429 at Collège militaire royal de Saint-Jean.

Staff and defence courses, Canadian Forces officer education system. The Chief of Defence Staff has authorized the development and implementation of a new four-level system of integrated and sequential command staff courses for the professional education and development of the Canadian Forces officers.

The Junior Staff Course (Level A) commenced operations in April 1970 at the Canadian Forces Staff School, Avenue Road, Toronto, Ont. It is a ten-week course conducted four times per year for junior captains selected from all classifications on a quota basis. It has as its aim "to prepare junior officers to perform staff functions of a general nature that are appropriate to their rank; and to provide the foundation for their subsequent professional development". The course includes studies in staff duties, the communication process, service knowledge leadership and management, professionalism and current affairs.

The Junior Command and Staff Course (Level B) (Land) will commence in March 1974 at Fort Frontenac, Kingston, Ont., replacing in part the Canadian Land Forces Command and Staff Course at Kingston which will cease operations in June 1973.

The Command and Staff Course (Level C) is scheduled to commence in September 1974 at Armour Heights in Toronto replacing the current Canadian Forces Staff College and part of the current Canadian Land Forces Command and Staff College course in the Canadian Forces officer education system.

The National Defence College Course (Level D), located at Fort Frontenac, Kingston, Ont., is designed to provide for joint education of senior military officers and civilian officials. It is a 46-week course for senior military officers and civilian officials of government departments and industry who are due for appointment to positions of higher responsibility. It enables them to study together, in the atmosphere of an advanced graduate school, those aspects of national and international affairs which determine or significantly affect Canada's defence and related policies. Lecturers are chosen from the leaders in various fields in Canada and other countries. In addition, field trips to certain parts of Canada, the United States, Europe, Asia, Africa, Australia and Latin America familiarize students with conditions and influences in their own country and in other countries.

4.7.5 The cadet movement in Canada

Three civilian agencies sponsor the cadet movement in Canada. The Air Cadet League of Canada, the Army Cadet League and the Navy League of Canada promote the Royal Canadian Air Cadets, the Royal Canadian Army Cadets and the Royal Canadian Sea Cadet Corps for boys between the ages of 13 and 18. In addition the Navy League has two other organizations, the Navy League Cadets for boys ages 11 to 13 and the Wrenette Corps for girls. The Department of National Defence supports these Leagues in their objectives of developing good citizenship, leadership and physical fitness among the youth of this country, and as a main activity, provides a number of summer camps across the country, and also exchange programs with the USA, Britain, and several European and Caribbean countries, whose cadets visit Canada at the same time, and take part in Canadian Cadet Camp activities.

4.7.6 The Defence Research Board

The Defence Research Board is responsible for scientific research in the Department of National Defence. The Board consists of a full-time chairman and vice-chairman, five ex-officio members from within the Department and from the National Research Council, and a varying number of members appointed by the Governor in Council from universities and industry.

Research is carried out in the Board's seven research establishments and through financial support to universities and to industry. It is specifically oriented to military requirements and covers a wide variety of scientific disciplines. Over the 25 years of the Board's existence, many of the developments arising from the research have been of value in the civilian field as well as the military.

There are, as well, effective arrangements with Canada's allies to ensure mutual use of defence scientific knowledge, resources and facilities. The Board represents Canada on a number of specialist committees through which NATO's scientific endeavours are co-ordinated. Liaison offices are maintained in London, Washington and Paris.

4.7.7 Canada Emergency Measures Organization

The Canada Emergency Measures Organization was brought into being to initiate, stimulate and co-ordinate the civil aspects of defence policy delegated to federal departments and agencies to meet the threat of nuclear war on Canada. It is also responsible for providing support and guidance to provincial and municipal authorities in the development of their emergency capabilities.

Plans exist at all levels of government for the provision of emergency arrangements for health services, welfare services, employment of manpower and national resources and for practically every area of endeavour that is required to respond in an emergency situation.

The *1969 Canada Year Book*, pp. 1201-1203, contains details of the establishment, powers and functions of Canada EMO, together with an outline of provincial government civil emergency responsibilities.

4.7.8 Defence Construction (1951) Limited

Defence Construction (1951) Limited (DCL) is a Crown corporation as defined in Part VIII of the Financial Administration Act and listed in Schedule "C" in the Act. As its name implies, the corporation's prime responsibility is the contracting for and supervision of construction projects for the Department of National Defence (DND).

Specifically, DCL's function is to obtain tenders, to make recommendations regarding awards, to award and to administer major construction and repair and maintenance contracts.

As an integral part of contract administration it is responsible for the supervision of the construction work, the certification of contractors' progress claims and that the work has been satisfactorily completed in accordance with the contract. The corporation also engages architects and engineers to prepare plans and specifications in accordance with the requirements of DND.

In addition to acting as the contracting agency for DND, DCL provides assistance and technical advice, when requested, to other government departments and agencies relative to construction matters. It also administers defence construction projects in Canada which are financed by the Government of the United States.

DCL maintains a head office in Ottawa with branch offices in Halifax, Montreal, Toronto, Winnipeg and Vancouver. A European office is located in Lahr, Federal Republic of Germany.

Sources

- 4.1 Clerk of the Privy Council and Secretary to the Cabinet, Privy Council Office; Clerk of the Senate; Office of the Representation Commissioner; House of Commons Division, Department of Supply and Services; Office of the Chief Electoral Officer.
- 4.2.1 Communications Division, Treasury Board.
- 4.2.2 Communications Division, Treasury Board; Public Relations Division, Public Service Commission.
- 4.2.3 Canada Immigration Division, Department of Manpower and Immigration.
- 4.2.4 Citizenship Registration Branch, Department of the Secretary of State.
- 4.2.5 Communication Services, Department of Indian Affairs and Northern Development; 1971/72 Annual Report, Department of Indian Affairs and Northern Development; Territorial Affairs Branch, Department of Indian Affairs and Northern Development; *Eskimos in Canada*, Department of Indian Affairs and Northern Development.
- 4.2.6 Co-ordinated by Canada Year Book staff, Information Division, Statistics Canada.
- 4.3.1 Newfoundland Department of Provincial Affairs; Prince Edward Island Department of the Provincial Secretary; Nova Scotia Department of the Provincial Secretary; New Brunswick Department of the Provincial Secretary; Quebec Department of Communications; Ontario Clerk of the Legislative Assembly; Manitoba Clerk of the Executive Council; Saskatchewan Clerk of the Executive Council; Alberta Clerk of the Executive Council; British Columbia Department of the Provincial Secretary.
- 4.3.2 Commissioner of the Yukon Territory; Commissioner of the Northwest Territories.
- 4.4 Public Finance Division, Institutional and Public Finance Statistics Branch, Statistics Canada.
- 4.5.1 Economic Council of Canada.
- 4.5.2 Information Division, Department of Regional Economic Expansion; Cape Breton Development Corporation.
- 4.5.3 Voluntary Planning, Nova Scotia; Quebec Planning and Development Bureau; Ontario Economic Council.
- 4.6.1 Information Division, Department of External Affairs.
- 4.6.2 Information Division, Department of External Affairs; Information Division, Canadian International Development Agency; International Development Research Centre.
- 4.7 Information Division, Department of National Defence.

Tables

..	not available	e	estimate
...	not appropriate or not applicable	p	preliminary
—	nil or zero	r	revised
--	too small to be expressed		certain tables may not add due to rounding

4.1 Duration and sessions of Parliaments, 1958-72

Order of Parliament	Session	Date of opening	Date of prorogation	Days of session	Sitting days of House of Commons	Date of election, writs returnable, dissolution, and length of Parliament ^{1,2}
24th Parliament	{ 1st	May 12, 1958	Sept. 6, 1958	117	93	{ Mar. 31, 1958 ³ Apr. 30, 1958 ⁴ Apr. 19, 1962 ⁵ 3 yr, 11 m, 20 d
	2nd	Jan. 15, 1959	July 18, 1959	185	127	
	3rd	Jan. 14, 1960	Aug. 10, 1960	210	146	
	4th	Nov. 17, 1960	Sept. 28, 1961	316 ⁶	174	
	5th	Jan. 18, 1962	Apr. 18, 1962	91	65	
25th Parliament	{ 1st	Sept. 27, 1962	Feb. 5, 1963 ⁷	131	72	{ June 18, 1962 ³ July 18, 1962 ⁴ Feb. 6, 1963 ⁵ 6 m, 20 d
26th Parliament	{ 1st	May 16, 1963	Dec. 21, 1963	220 ⁸	117	{ Apr. 8, 1963 ³ May 8, 1963 ⁴ Sept. 8, 1965 ⁵ 2 yr, 4 m, 1 d
	2nd	Feb. 18, 1964	Apr. 3, 1965	411 ⁹	248	
	3rd	Apr. 5, 1965	Sept. 8, 1965 ¹⁰	157 ¹¹	53	
27th Parliament	{ 1st	Jan. 18, 1966	May 8, 1967	476 ¹²	250	{ Nov. 8, 1965 ³ Dec. 9, 1965 ⁴ Apr. 23, 1968 ⁵ 2 yr, 4 m, 15 d
	2nd	May 8, 1967	Apr. 23, 1968	352 ¹³	155	
28th Parliament	{ 1st	Sept. 12, 1968	Oct. 22, 1969	386 ¹⁴	199 ¹⁵	{ June 25, 1968 ³ July 25, 1968 ⁴ Sept. 1, 1972 ⁵ 4 yr, 1 m, 8 d
	2nd	Oct. 23, 1969	Oct. 7, 1970	349 ¹⁶	155 ¹⁷	
	3rd	Oct. 8, 1970	Feb. 16, 1972	497 ¹⁸	244	
	4th	Feb. 17, 1972	Sept. 1, 1972	197 ¹⁹	91	

¹ The ordinary legal limit of duration for each Parliament is five years.
² Duration of Parliament in years, months and days. The life of a Parliament is counted from the date of return of election writs to the date of dissolution, both days inclusive (BNA Act, Sect. 50).
³ Date of general election.
⁴ Writs returnable.
⁵ Dissolution of Parliament.
⁶ Includes long adjournment from July 13 to Sept. 7, 1961.
⁷ Government defeated in House of Commons on want of confidence motion.
⁸ Includes long adjournment from Aug. 2 to Sept. 30, 1963.
⁹ Includes long adjournment from Dec. 18, 1964 to Feb. 16, 1965.
¹⁰ House adjourned on June 30 until Sept. 27 but dissolved on Sept. 8, 1965.
¹¹ Includes long adjournment from June 30 to Sept. 27, superseded by dissolution on Sept. 8, 1965.
¹² Includes 18-day Christmas adjournment, 11-day Easter adjournment, and two long adjournments from July 14 to Aug. 29 and Sept. 9 to Oct. 5.
¹³ Includes adjournment from July 7, 1967 to Sept. 25, 1967; Christmas adjournment from Dec. 21, 1967 to Jan. 22, 1968; and Easter adjournment from Mar. 27, 1968 to Apr. 23, 1968.
¹⁴ Includes Christmas adjournment from Dec. 20, 1968 to Jan. 14, 1969; Easter adjournment from Apr. 2, 1969 to Apr. 14, 1969; and summer adjournment from July 25, 1969 to Oct. 22, 1969.
¹⁵ Includes two days devoted to committee work.
¹⁶ Includes Christmas adjournment from Dec. 19, 1969 to Jan. 12, 1970; Easter adjournment from Mar. 25, 1970 to Apr. 6, 1970; and summer adjournment from June 26, 1970 to Oct. 5, 1970.
¹⁷ Includes one day devoted to committee work.
¹⁸ Includes Christmas adjournment from Dec. 18, 1970 to Jan. 11, 1971; Easter adjournment from Apr. 7, 1971 to Apr. 19, 1971; adjournment for committee work on May 27, 1971; summer adjournment from June 30, 1971 to Sept. 7, 1971; Christmas adjournment from Dec. 23, 1971 to Dec. 28, 1971, Dec. 31, 1971 to Jan. 12, 1972 and Jan. 12, 1972 to Feb. 16, 1972.
¹⁹ Includes Easter adjournment from Mar. 29, 1972 to Apr. 13, 1972; and summer adjournment from July 7, 1972 to Aug. 31, 1972.

4.2 Representation in the Senate since Confederation, 1867

Province	1867	1870	1871	1873	1882	1887	1892	1903	1905	1915-1948	1949-1972
Ontario	24	24	24	24	24	24	24	24	24	24	24
Quebec	24	24	24	24	24	24	24	24	24	24	24
Atlantic Provinces	24	24	24	24	24	24	24	24	24	24	30
Nova Scotia	12	12	12	10	10	10	10	10	10	10	10
New Brunswick	12	12	12	10	10	10	10	10	10	10	10
Prince Edward Island	...	...	...	4	4	4	4	4	4	4	4
Newfoundland	...	...	...	...	...	...	...	...	...	...	6
Western Provinces	...	2	5	5	6	8	9	11	15	24	24
Manitoba	...	2	2	2	3	3	4	4	4	6	6
British Columbia	...	...	3	3	3	3	3	3	3	6	6
Saskatchewan	}	...	...	...	...	2	2	4	{	4	6
Alberta											
Total	72	74	77	77	78	80	81	83	87	96	102

4.3 Representation in the House of Commons, as at federal general elections 1867-1972

Province or territory	1867	1872	1874 1878	1882	1887 1891	1896 1900	1904	1908 1911	1917 1921	1925 1926 1930	1935 1940 1945	1949	1953 1957 1958 1962 1963 1965	1968 1972
Ontario	82	88	88	92	92	92	86	86	82	82	82	83	85	88
Quebec	65	65	65	65	65	65	65	65	65	65	65	73	75	74
Nova Scotia	19	21	21	21	21	20	18	18	16	14	12	13	12	11
New Brunswick	15	16	16	16	16	14	13	13	11	11	10	10	10	10
Manitoba	...	4	4	5	5	7	10	10	15	17	17	16	14	13
British Columbia	...	6	6	6	6	6	7	7	13	14	16	18	22	23
Prince Edward Island	...	...	6	6	6	5	4	4	4	4	4	4	4	4
Saskatchewan	...	...	...	...	4	4	10	10	16	21	21	20	17	13
Alberta	...	...	...	...	...	...	...	7	12	16	17	17	17	19
Yukon Territory	...	...	...	...	...	...	1	1	1	1	1	1	1	1
Mackenzie River, NWT ¹	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Newfoundland	...	...	...	...	...	...	...	...	...	...	...	7	7	7
Total	181	200	206	211	215	213	214	221	235	245	245	262	265	264

¹ Electoral district of Northwest Territories in 1963, 1965, 1968 and 1972.

4.4 Electoral districts, voters on the list, votes polled and names and addresses of members of the House of Commons as elected at the twenty-ninth general election, Oct. 30, 1972

Province and electoral district	Population, Census 1971	Voters on list ¹	Total votes polled (incl. rejections) ¹	Votes polled by member ¹	Name of member	Postal address	Party affiliation ²
NEWFOUNDLAND (7 members)							
Bonavista — Trinity — Conception	69,543	42,024	23,782	12,635	D. Rooney	Lower Island Cove	Lib.
Burin — Burgeo	54,044	29,631	20,267	13,875	Hon. D. C. Jamieson	Swift Current	Lib.
Gander — Twillingate	71,480	39,184	24,328	12,420	J. Lundrigan	Gander	PC
Grand Falls — White Bay — Labrador	75,106	39,291	25,218	14,274	B. Rompkey	Grand Falls	Lib.
Humber — St. George's — St. Barbe	82,263	42,300	29,479	16,378	J. Marshall	Corner Brook	PC
St. John's East	87,477	49,519	31,247	17,825	J. A. McGrath	St. John's	PC
St. John's West	82,191	46,715	27,989	16,818	W. Carter	St. John's	PC
PRINCE EDWARD ISLAND (4 members)							
Cardigan	23,363	14,803	13,001	5,528	Hon. D. J. MacDonald	Bothwell	Lib.
Egmont	30,629	17,439	14,876	7,868	D. MacDonald	Alberton	PC
Hillsborough	35,639	23,688	19,901	10,604	H. Macquarrie	Victoria	PC
Malpeque	22,010	12,743	11,162	5,835	Hon. J. A. MacLean	Belle River	PC
NOVA SCOTIA (11 members)							
Annapolis Valley	74,123	45,615	36,380	20,970	P. Nowlan	Wolfville	PC
Cape Breton — East Richmond	64,371	37,976	31,827	12,071	D. MacInnis	Glace Bay	PC
Cape Breton Highlands — Canso	62,550	39,707	34,074	16,941	Hon. A. J. MacEachen	Inverness	Lib.
Cape Breton — The Sydneys	68,135	40,472	33,392	15,421	R. Muir	Sydney Mines	PC
Central Nova	62,726	41,241	33,022	18,140	E. M. MacKay	Lorne	PC
Cumberland — Colchester North	65,899	43,051	34,072	19,455	R. C. Coates	Amherst	PC
Dartmouth—Halifax East	98,399	56,805	43,422	24,553	M. Forrestall	Dartmouth	PC
Halifax	64,523	43,024	32,648	17,986	Hon. R. L. Stanfield ³	Ottawa	PC
Halifax — East Hants	100,637	61,934	48,054	27,645	B. McCleave	Halifax	PC
South Shore	65,420	43,334	33,407	18,654	L. R. Crouse	Lunenburg	PC
South Western Nova	62,177	38,272	30,775	15,040	C. E. Haliburton	Digby	PC
NEW BRUNSWICK (10 members)							
Carleton — Charlotte	59,244	36,618	24,572	14,431	F. A. McCain	Florenceville	PC
Fundy — Royal	70,316	44,334	32,000	19,107	G. Fairweather	Rothsay	PC
Gloucester	63,556	36,956	29,690	14,210	H. Breaux	Tracadie	Lib.
Madawaska — Victoria	54,772	31,692	24,094	13,104	E. Corbin	Edmundston	Lib.
Moncton	80,188	52,489	43,391	22,629	C. H. Thomas	Riverview Heights	PC
Northumberland — Miramichi	54,094	30,102	23,763	10,922	G. A. P. Smith	Newcastle	Lib.
Restigouche	52,485	29,758	24,394	11,650	Hon. J.-E. Dubé	Campbellton	Lib.
Saint John — Lancaster	68,460	42,827	30,512	16,350	T. Bell	Saint John	PC
Westmorland — Kent	51,856	32,492	26,734	14,749	R.-A. LeBlanc	Grande-Digue	Lib.
York — Sunbury	79,586	50,068	38,762	20,274	J. R. Howie	Fredericton	PC
QUEBEC (74 members)							
Abitibi	58,427	35,015	24,465	12,510	G. Laprise	LaSarre	SC
Argenteuil — Deux- Montagnes	80,574	49,669	39,350	18,750	F. Fox	Oka	Lib.

4.4 Electoral districts, voters on the list, votes polled and names and addresses of members of the House of Commons as elected at the twenty-ninth general election, Oct. 30, 1972 (continued)

Province and electoral district	Population, Census 1971	Voters on list ¹	Total votes polled (incl. rejections) ¹	Votes polled by member ¹	Name of member	Postal address	Party affiliation ²
QUEBEC (concluded)							
Beauce	69,984	44,013	33,803	13,170	Y. Caron	Ville-St-Georges-Ouest	Lib.
Beauharnois — Salaberry	73,396	46,627	36,519	16,758	G. Laniel	Valleyfield	Lib.
Bellechasse	64,675	40,508	29,948	12,999	A. Lambert	Berthier-sur-Mer	SC
Berthier	62,521	40,988	29,980	14,035	A. Yanakis	St-Gabriel-de-Brandon	Lib.
Bonaventure — Îles-de-la-Madeleine	55,004	32,041	23,424	12,203	A. Béchard	Carleton	Lib.
Brome — Missisquoi	76,787	47,912	38,600	15,593	H. Graffey	Knowlton	PC
Chambly	120,337	71,680	53,940	26,529	Y. L'Heureux	Beleuil	Lib.
Champlain	62,068	40,182	31,200	14,882	R. Matte	St-Marc-des-Carrières	SC
Charlevoix	59,686	37,783	27,337	10,264	G. Caouette	La Malbaie	SC
Chicoutimi	82,658	48,850	38,406	15,545	P. Langlois	Chicoutimi	Lib.
Compton	62,197	37,360	28,248	11,636	H. Latulippe	Lac-Mégantic	SC
Drummond	75,533	47,230	38,914	15,923	J.-M. Boisvert	Drummondville	SC
Frontenac	67,991	40,581	31,595	12,014	L. Corriveau	Thetford Mines	Lib.
Gaspé	56,280	33,773	24,118	12,421	J.-A. Cyr	Chandler	Lib.
Gatineau	81,320	48,769	34,065	15,893	G. Clermont	Thurso	Lib.
Hull	93,804	57,740	39,497	24,630	G. Isabelle	Hull	Lib.
Joliette	83,417	53,159	42,708	18,074	R. LaSalle	Crabtree	Ind.
Kamouraska	63,228	38,751	27,320	14,202	C.-E. Dionne	St-Pascal	SC
Labelle	82,228	51,910	38,368	15,807	M. Dupras	St-Jérôme	Lib.
Lac-Saint-Jean	56,862	32,253	25,412	11,261	M. Lessard	Alma	Lib.
Langlier	58,559	39,260	27,662	14,646	Hon. J. Marchand	Quebec	Lib.
Lapointe	72,451	42,105	31,426	16,191	G. Marceau	Jonquières	Lib.
Laprairie	131,675	78,232	60,283	34,516	I. Watson	Laprairie	Lib.
Lévis	80,037	52,639	42,522	17,514	R. Guay	Lauzon	Lib.
Longueuil	112,703	72,554	52,547	22,129	J. Olivier	Longueuil	Lib.
Lotbinière	70,964	43,858	36,688	21,366	A. Fortin	Victoriaville	SC
Louis-Hébert	106,928	73,331	57,028	30,492	Albanie Morin	Sillery	Lib.
Manicouagan	80,461	49,954	31,364	16,777	G. Blouin	Sept Îles	Lib.
Matane	48,373	28,351	19,715	10,038	P. De Bané	Matane	Lib.
Montmorency	116,204	73,807	56,800	24,231	O. Laflamme	Ste-Foy	Lib.
Pontiac	95,956	55,597	23,752	11,780	T. Lefebvre	Davidson	Lib.
Portneuf	116,079	70,702	55,189	23,626	R. Godin	Les Écureuils	SC
Québec-Est	81,782	54,123	39,883	19,263	G. Duquet	Quebec	Lib.
Richelieu	77,197	50,798	39,321	18,105	F. Côté	Ste-Brigitte-des-Saults	Lib.
Richmond	62,741	36,959	29,211	14,039	L. Beaudoin	Brompton	SC
Rimouski	69,276	43,191	32,065	13,241	E. Allard	Rimouski	SC
Rivière-du-Loup — Temiscouata	59,816	36,427	26,804	10,012	R. Gendron	Rivière-du-Loup	Lib.
Roberval	53,671	31,755	24,254	11,310	C.-A. Gauthier	Mistassini	SC
Saint-Hyacinthe	82,540	54,602	44,921	16,686	C. Wagner	Montreal	PC
Saint-Jean	83,274	51,000	39,915	16,466	W. B. Smith	Hemmingford	Lib.
Saint-Maurice	71,147	45,471	37,154	19,840	Hon. J. Chrétien	Lac-des-Piles	Lib.
Shefford	79,083	49,734	40,369	18,809	G. Rondeau	Granby	SC
Sherbrooke	97,550	64,848	49,592	20,568	Irénée Pelletier	Sherbrooke	Lib.
Temiscamingue	54,545	30,871	25,227	15,548	R. Caouette ^a	Rouyn	SC
Terrebonne	122,332	72,952	57,420	24,901	J.-R. Comtois	Repentigny	Lib.
Trois-Rivières métropolitain	95,389	63,007	47,704	19,892	C.-G. Lajoie	Cap-de-la-Madeleine	Lib.
Villeuve	58,859	34,587	26,321	12,070	O. Tétrault	Val-d'Or	SC
Island of Montreal and Île-Jésus							
Ahuntsic	90,537	55,705	44,340	21,740	Hon. Jeanne Sauvé	Outremont	Lib.
Dollard	123,429	74,954	60,822	38,995	Hon. J.-P. Goyer	St-Laurent	Lib.
Duvernay	112,102	63,734	49,907	23,050	Y. Demers	Ville-de-Laval	Lib.
Gamelin	92,533	57,551	44,052	20,860	A. Portelance	Montreal	Lib.
Hochelaga	65,393	40,498	27,512	11,235	Hon. G. Pelletier	Montreal	Lib.
Lachine	92,202	57,207	46,815	26,688	R. Blaker	Pointe-Claire	Lib.
Lafontaine	70,166	43,892	30,326	13,423	G.-C. Lachance	Montreal	Lib.
LaSalle	116,235	71,045	52,853	30,815	J. Campbell	LaSalle	Lib.
Laurier	67,023	34,526	21,971	10,946	F.-E. Leblanc	Montreal	Lib.
Laval	115,908	67,085	51,725	28,120	M. Roy	Ville-de-Laval	Lib.
Maisonneuve — Rosemont	74,499	46,861	32,811	13,607	J.-A. Thomas	Montreal	Lib.
Mercier	118,807	70,241	51,502	22,207	P. Boulanger	Pointe-aux-Trembles	Lib.
Montréal — Bourassa	124,746	75,293	54,578	25,728	J.-L. Trudel	Montréal-Nord	Lib.
Mount Royal	90,844	58,435	46,982	36,874	Rt. Hon. P.-E. Trudeau ^a	Ottawa	Lib.
Notre-Dame-de-Grâce	77,052	46,713	36,882	24,126	Hon. W. Allmand	Montreal	Lib.
Outremont	75,621	47,019	35,741	21,373	Hon. M. Lalonde	Montreal	Lib.
Papineau	73,439	43,061	30,657	15,356	Hon. A. Ouellet	Montreal	Lib.
Saint-Denis	77,362	37,215	28,313	16,991	M. Prud'homme	Montreal	Lib.
Saint-Henri	57,162	31,246	20,639	7,191	G. Loiselle	Montreal	Lib.
Saint-Jacques	53,179	25,007	16,929	8,702	J. Guilbault	Montreal	Lib.
Sainte-Marie	58,381	37,043	24,110	7,945	R. Dupont	Ville-Lafèche	Lib.
Saint-Michel	138,109	74,583	52,771	23,830	Monique Bégin	Montreal	Lib.
Vaudreuil	112,103	65,561	52,475	27,372	H. T. Herbert	Hudson	Lib.
Verdun	74,718	48,036	36,894	20,943	Hon. B. Mackasey	Verdun	Lib.
Westmount	83,645	53,393	42,272	24,052	Hon. C. M. Drury	Westmount	Lib.
ONTARIO (88 members)							
Algoma	52,746	29,469	22,466	10,161	M. Foster	Desbarats	Lib.
Brant	97,549	60,227	47,270	20,001	D. Blackburn	Brantford	NDP
Bruce	63,308	42,588	33,911	14,974	R. Whicker	Warton	Lib.
Cochrane	54,786	30,596	22,475	10,247	R. W. Stewart	Moonbeam	Lib.

4.4 Electoral districts, voters on the list, votes polled and names and addresses of members of the House of Commons as elected at the twenty-ninth general election, Oct. 30, 1972 (continued)

Province and electoral district	Population, Census 1971	Voters on list ¹	Total votes polled (incl. rejections) ¹	Votes polled by member ¹	Name of member	Postal address	Party affiliation ²
ONTARIO (continued)							
Elgin	66,608	41,217	34,681	17,280	J. Wise	St. Thomas	PC
Essex — Windsor	94,846	55,501	42,048	19,793	Hon. E. F. Whelan	Anderson	Lib.
Fort William	60,207	37,282	29,832	11,535	P. McRae	Vicker's Heights	Lib.
Frontenac — Lennox and Addington	61,668	38,321	29,386	16,562	D. Alkenbrack	Napanee	PC
Glengarry — Prescott — Russell	62,599	38,499	29,877	14,780	D. Ethier	Dalkeith	Lib.
Grenville — Carleton	119,408	72,895	62,075	32,832	W. Baker	Ottawa	PC
Grey — Simcoe	67,997	44,195	34,789	17,092	G. Mitges	Owen Sound	PC
Halton	105,801	62,588	52,039	22,640	T. O'Connor	Oakville	PC
Halton — Wentworth	124,390	76,643	63,535	31,150	B. Kemping	Dundas	PC
Hamilton East	74,709	41,231	31,134	13,053	Hon. J. C. Munro	Hamilton	Lib.
Hamilton Mountain	106,266	64,640	53,306	21,708	D. M. Beattie	Hamilton	PC
Hamilton — Wentworth	99,169	61,756	49,403	18,611	S. O'Sullivan	Stoney Creek	PC
Hamilton West	81,664	50,566	38,752	19,847	L. M. Alexander	Hamilton	PC
Hastings	64,328	41,278	31,833	16,591	J. Ellis	Belleville	PC
Huron	58,515	36,686	29,751	18,921	R. E. McKinley	Zurich	PC
Kenora — Rainy River	54,853	31,910	23,331	9,244	J. M. Reid	Kenora	Lib.
Kent — Essex	85,580	51,337	36,524	18,850	H. W. Danforth	Blenheim	PC
Kingston and The Islands	82,907	54,183	43,184	22,788	Flora MacDonald	Kingston	PC
Kitchener	106,127	64,494	48,644	18,351	K. R. Hymmen	Kitchener	Lib.
Lambton — Kent	67,892	41,462	31,201	16,056	J. R. Holmes	Wallaceburg	PC
Lanark — Renfrew — Carleton	63,818	41,483	34,876	17,893	P. Dick	Kanata	PC
Leeds	66,263	41,905	34,272	18,130	T. Cossitt	Brockville	PC
Lincoln	84,935	49,985	39,777	16,830	K. Higson	Grimsby	PC
London East	89,221	51,271	37,899	14,037	C. R. Turner	London	Lib.
London West	106,317	74,352	59,747	29,474	J. Buchanan	London	Lib.
Middlesex	92,814	55,964	45,159	20,614	W. C. Frank	Hyde Park	PC
Niagara Falls	89,537	53,378	39,722	15,705	J. Hueglin	Niagara Falls	PC
Nickel Belt	85,577	44,556	35,203	14,033	J. Rodriguez	Coniston	NDP
Nipissing	67,312	37,767	30,485	12,451	J.-J. Blais	North Bay	Lib.
Norfolk — Haldimand	74,568	46,348	39,588	21,214	W. Knowles	Langton	PC
Northumberland — Durham	73,705	46,410	38,873	17,385	A. Lawrence	Janetville	PC
Ontario	87,842	52,037	42,839	16,328	N. A. Cafik	Pickering	Lib.
Oshawa — Whitby	111,361	67,580	57,624	23,757	E. Broadbent	Oshawa	NDP
Ottawa — Carleton	130,906	80,040	67,771	31,394	Hon. J. Turner	Ottawa	Lib.
Ottawa Centre	70,584	47,032	37,459	14,101	H. Poulin	Ottawa	Lib.
Ottawa East	71,277	46,982	34,785	20,450	J.-R. Gauthier	Ottawa	Lib.
Ottawa West	98,956	64,443	55,004	22,169	P. Reilly	Ottawa	PC
Oxford	80,336	49,439	40,838	25,438	W. Nesbitt	Woodstock	PC
Parry Sound — Muskoka	62,162	40,428	30,871	14,297	S. Darling	Burks Falls	PC
Peel — Dufferin — Simcoe	119,885	71,239	57,780	25,692	E. Madill	Orangeville	PC
Peel South	172,352	103,773	82,432	31,984	D. Blenkarn	Mississauga	PC
Perth — Wilmot	72,996	46,100	35,844	19,859	B. Jarvis	Stratford	PC
Peterborough	85,064	55,642	45,382	20,282	Hon. J. H. Faulkner	Lakefield	Lib.
Port Arthur	57,456	35,251	27,586	14,351	Hon. R. K. Andras	Thunder Bay	Lib.
Prince Edward — Hastings	74,856	45,904	35,959	19,789	Hon. G. Hees	Cobourg	PC
Renfrew North — Nipissing East	61,707	33,278	26,144	13,553	L. D. Hopkins	Petawawa	Lib.
Sarnia — Lambton	83,631	49,590	38,010	16,112	J. Cullen	Sarnia	Lib.
Sault Ste. Marie	81,002	44,810	35,917	12,851	C. Symes	Sault Ste. Marie	NDP
St. Catharines	101,418	64,983	49,281	19,256	T. Morgan	St. Catharines	PC
Simcoe North	93,655	59,500	46,759	22,075	P. B. Rynard	Orillia	PC
Stormont — Dundas	72,052	44,446	33,750	17,243	Hon. L. Lamoureux ⁴	Cornwall	PC
Sudbury	94,624	56,886	44,222	24,125	J. Jerome	Sudbury	Lib.
Thunder Bay	53,214	31,140	22,782	10,954	K. Penner	Nipigon	Lib.
Timiskaming	49,870	29,632	23,383	11,327	A. Peters	New Liskeard	NDP
Timmins	53,616	31,974	25,461	10,804	J. Roy	Timmins	Lib.
Victoria — Haliburton	60,996	40,850	32,381	18,450	W. C. Scott	Kinmount	PC
Waterloo	120,719	76,139	60,149	24,197	M. Saltsman	Galt	NDP
Welland	82,860	51,171	38,154	18,693	V. Railton	Port Colborne	Lib.
Wellington	75,989	48,034	39,390	20,730	A. D. Hales	Guelph	PC
Wellington — Grey — Dufferin — Waterloo	73,846	45,692	34,082	17,081	P. Beatty	Fergus	PC
Windsor — Walkerville	87,514	51,886	40,489	17,298	M. MacGuigan	Windsor	Lib.
Windsor West	90,466	50,978	37,323	17,957	Hon. H. Gray	Windsor	Lib.
York North	125,296	77,799	66,321	28,333	B. J. Danson	Willowdale	Lib.
York — Simcoe	99,624	61,962	50,594	22,957	S. Stevens	King City	PC
Metropolitan Toronto							
Broadview	78,601	36,640	26,907	11,063	J. Gilbert	Toronto	NDP
Davenport	84,780	27,761	21,858	9,366	C. L. Caccia	Toronto	Lib.
Don Valley	104,606	68,705	61,697	30,764	J. Gillies	Thornhill	PC
Eglinton	78,314	52,875	43,132	19,389	Hon. M. Sharp	Ottawa	Lib.
Etobicoke	135,971	85,788	72,200	32,007	Hon. A. Gillespie	Toronto	Lib.
Greenwood	80,797	45,157	33,950	14,260	A. F. Brewin	Toronto	NDP
High Park — Humber Valley	86,050	52,047	43,944	18,411	O. Jelinek	Toronto	PC
Parkdale	82,207	39,250	28,321	12,214	Hon. S. Haidasz	Toronto	Lib.
Rosedale	81,265	49,063	37,086	16,072	Hon. D. S. Macdonald	Ottawa	Lib.
St. Paul's	72,174	46,983	37,504	15,712	R. Atkey	Toronto	PC

4.4 Electoral districts, voters on the list, votes polled and names and addresses of members of the House of Commons as elected at the twenty-ninth general election, Oct. 30, 1972 (continued)

Province and electoral district	Population, Census 1971	Voters on list ¹	Total votes polled (incl. rejections) ¹	Votes polled by member ¹	Name of member	Postal address	Party affiliation ²
ONTARIO (concluded)							
Metropolitan Toronto (concluded)							
Scarborough East	149,514	85,506	69,193	27,339	R. Stackhouse	Scarborough	PC
Scarborough West	87,383	50,866	41,800	15,028	J. Harney	Toronto	NDP
Spadina	75,487	27,423	20,581	8,323	P. Stollery	Toronto	Lib.
Toronto — Lakeshore	77,227	46,382	37,665	14,692	T. Grier	Toronto	NDP
Trinity	81,073	28,791	21,573	8,517	Hon. P. Hellyer	Toronto	PC
York Centre	160,051	84,806	65,063	26,911	J. E. Walker	Downsview	Lib.
York East	102,910	61,283	48,384	18,729	I. Arrol	Toronto	PC
York — Scarborough	193,156	113,716	94,215	39,219	Hon. R. Stanbury	Ottawa	Lib.
York South	85,768	40,356	30,890	14,225	D. Lewis ³	Toronto	NDP
York West	139,650	71,773	57,513	22,270	J. Fleming	Toronto	Lib.
MANITOBA (13 members)							
Brandon — Souris	62,547	40,089	30,585	17,923	Hon. W. G. Dinsdale	Brandon	PC
Churchill	77,507	41,916	28,290	9,462	K. Taylor	Flin Flon	PC
Dauphin	54,110	33,729	25,262	12,583	G. Ritchie	Dauphin	PC
Lisgar	56,974	34,744	24,515	17,253	J. B. Murta	Graysville	PC
Marquette	54,070	32,474	25,915	16,155	C. Stewart	Minnedosa	PC
Portage	51,951	29,710	21,957	9,781	P. P. Masniuk	Inwood	PC
Provencher	62,089	36,026	25,394	11,262	J. Epp	Steinbach	PC
St. Boniface	103,943	64,610	50,733	22,200	J.-P. Guay	Winnipeg	Lib.
Selkirk	98,106	61,817	46,747	17,872	D. Rowland	Winnipeg	NDP
Winnipeg North	83,845	52,902	37,859	15,926	D. Orlikow	Winnipeg	NDP
Winnipeg North Centre	73,559	43,008	28,573	13,263	S. H. Knowles	Winnipeg	NDP
Winnipeg South	94,743	63,574	50,493	25,501	Hon. J. Richardson	Winnipeg	Lib.
Winnipeg South Centre	114,803	72,626	57,314	25,554	D. McKenzie	Winnipeg	PC
SASKATCHEWAN (13 members)							
Assiniboia	57,131	33,122	27,656	9,936	B. Knight	Weyburn	NDP
Battleford — Kindersley	66,855	37,435	29,630	10,374	N. Horner	Rosetown	PC
Mackenzie	47,919	28,335	21,235	8,163	S. J. Korchinski	Rama	PC
Meadow Lake	50,391	27,433	20,298	7,194	E. Nesdoly	Shellbrook	NDP
Moose Jaw	61,810	37,595	30,296	11,968	D. Neil	Moose Jaw	PC
Prince Albert	72,195	42,540	33,596	19,410	Rt. Hon. J. G. Diefenbaker	Prince Albert	PC
Qu'Appelle — Moose Mountain	64,000	37,029	29,480	14,706	Hon. A. Hamilton	Estevan	PC
Regina East	89,048	54,657	42,498	17,781	J. Balfour	Regina	PC
Regina — Lake Centre	97,537	61,083	48,460	18,935	L. Benjamin	Regina	NDP
Saskatoon — Biggar	87,303	54,779	40,896	16,787	A. P. Gleave	Saskatoon	NDP
Saskatoon — Humboldt	102,185	65,202	54,752	24,733	Hon. O. E. Lang	Saskatoon	Lib.
Swift Current — Maple Creek	60,972	36,188	29,106	11,500	F. Hamilton	Swift Current	PC
Yorkton — Melville	68,896	43,301	34,295	15,998	L. Nystrom	Yorkton	NDP
ALBERTA (19 members)							
Athabasca	67,746	32,868	22,026	13,069	P. Yewchuk	Lac La Biche	PC
Battle River	59,545	33,794	26,388	16,268	H. Kuntz	Camrose	PC
Calgary Centre	87,346	56,347	43,229	22,667	H. Andre	Calgary	PC
Calgary North	118,118	67,305	52,821	30,897	E. Woolliams	Calgary	PC
Calgary South	133,796	78,228	61,963	34,923	P. Bawden	Calgary	PC
Crowfoot	55,672	32,647	25,076	18,667	J. Horner	Pollockville	PC
Edmonton Centre	94,410	56,112	40,332	21,406	S. E. Paproski	Edmonton	PC
Edmonton East	105,904	57,997	41,328	21,136	W. M. Skoreyko	Sherwood Park	PC
Edmonton — Strathcona	109,725	67,819	54,453	26,908	D. Roche	Edmonton	PC
Edmonton West	126,765	75,330	59,430	29,875	Hon. M. Lambert	Edmonton	PC
Lethbridge	75,795	44,585	33,302	18,847	K. Hurlburt	Fort Macleod	PC
Medicine Hat	62,697	36,563	28,350	15,027	B. Hargrave	Walsh	PC
Palliser	100,115	58,886	46,150	29,285	S. Schumacher	Drumheller	PC
Peace River	62,413	36,117	25,728	14,255	G. Baldwin	West Peace River	PC
Pembina	94,678	54,342	41,676	23,864	D. Hollands	Ardrossan	PC
Red Deer	78,792	45,308	34,426	20,919	T. G. Towers	Red Deer	PC
Rocky Mountain	63,834	36,333	26,887	12,985	J. Clark	Edson	PC
Vegreville	58,986	34,720	27,077	19,440	D. Mazankowski	Vegreville	PC
Wetaskiwin	71,537	41,689	31,554	19,350	S. Schellenberger	Spruce Grove	PC
BRITISH COLUMBIA (23 members)							
Burnaby — Richmond — Delta	123,381	73,060	56,245	19,798	J. Reynolds	Delta	PC
Burnaby — Seymour	103,410	64,363	48,547	18,274	E. Nelson	Burnaby	NDP
Capilano	67,918	64,435	51,821	24,492	Hon. J. Davis	West Vancouver	Lib.
Coast Chilcotin	67,858	38,088	25,884	8,868	H. Olausen	Powell River	NDP
Comox — Alberni	89,644	50,681	36,059	17,478	T. Barnett	Campbell River	NDP
Esquimalt — Saanich	105,411	65,937	50,331	20,542	D. Munro	Saanich	PC
Fraser Valley East	85,401	49,749	35,674	12,303	A. B. Patterson	Abbotsford	PC
Fraser Valley West	117,467	67,260	48,127	22,613	M. Rose	Langley	NDP
Kamloops — Cariboo	104,739	60,670	43,170	14,708	L. S. Marchand	Kamloops	Lib.
Kootenay West	67,513	39,431	29,553	15,633	R. Harding	Silverton	NDP
Nanaimo — Cowichan — The Islands	97,106	61,054	46,324	25,486	T. C. Douglas	Nanaimo	NDP
New Westminster	106,331	64,896	46,842	19,224	S. M. Leggatt	Port Coquitlam	NDP

4.4 Electoral districts, voters on the list, votes polled and names and addresses of members of the House of Commons as elected at twenty-ninth general election, Oct. 30, 1972 (concluded)

Province and electoral district	Population, Census 1971	Voters on list ¹	Total votes polled (incl. rejections) ¹	Votes polled by member ¹	Name of member	Postal address	Party affiliation ²
BRITISH COLUMBIA (concluded)							
Okanagan Boundary	101,304	65,322	48,559	20,468	G. H. Whittaker	Kelowna	PC
Okanagan — Kootenay	92,717	55,260	38,845	12,416	D. Stewart	Kimberley	Lib.
Prince George — Peace River	108,022	55,524	37,428	14,341	F. Oberle	Chetwynd	PC
Skeena	87,917	41,077	27,754	13,100	F. Howard	Terrace	NDP
Surrey — White Rock	104,072	59,086	44,955	21,209	B. Mather	Surrey	NDP
Vancouver Centre	91,473	68,848	47,740	19,341	Hon. R. Basford	Vancouver	Lib.
Vancouver East	85,071	43,043	28,472	13,524	C. P. Neale	Vancouver	NDP
Vancouver Kingsway	85,005	46,661	33,117	18,107	Grace MacInnis	Vancouver	NDP
Vancouver Quadra	79,949	51,621	42,042	17,763	B. Clarke	Vancouver	PC
Vancouver South	88,701	57,238	44,931	17,762	J. A. Fraser	Vancouver	PC
Victoria	88,211	63,077	48,591	22,842	A. B. McKinnon	Victoria	PC
YUKON TERRITORY (1 member)							
Yukon	18,388	10,664	8,638	4,332	E. Neilsen	Whitehorse	PC
NORTHWEST TERRITORIES (1 member)							
Northwest Territories	34,807	19,483	14,350	5,616	W. Firth	Yellowknife	NDP

¹ Unofficial figures. Official figures appear in the *Report of the Chief Electoral Officer*.

² Party standings as a result of the general election, Oct. 30, 1972: Liberal 109, Progressive Conservative 107, New Democratic 31, Social Credit 15. One member was elected as an independent and one without any party affiliation.

³ Leader of a political party.

⁴ Speaker of the House of Commons.

4.5 Voters on the lists and votes polled at the federal general elections of 1963, 1965, 1968 and 1972

Province or territory	Voters and votes polled			
	Voters on the lists			
	1963	1965	1968	1972 ¹
Newfoundland	221,321	226,082	237,594	288,664
Prince Edward Island	57,029	56,484	58,216	68,673
Nova Scotia	401,874	401,521	412,791	491,431
New Brunswick	304,732	304,734	317,912	387,336
Quebec	2,807,634	2,933,031	3,083,260	3,683,413
Ontario	3,455,363	3,609,895	3,846,064	4,584,794
Manitoba	516,525	517,928	531,563	607,225
Saskatchewan	505,551	508,733	517,598	558,699
Alberta	700,920	725,447	774,565	946,990
British Columbia	921,074	972,063	1,059,959	1,306,381
Yukon Territory ⁴	6,878	6,660	7,559	10,664
Northwest Territories ⁵	11,856	12,326	13,807	19,483
Total	9,910,757	10,274,904	10,860,888	12,953,753
	Votes polled			
	1963	1965	1968	1972 ¹
Newfoundland	152,175	148,392	161,570	182,310
Prince Edward Island	69,486 ²	72,006 ²	51,225	58,940
Nova Scotia	419,352 ³	420,146 ³	339,600	391,073
New Brunswick	245,557	244,184	254,716	297,912
Quebec	2,143,246	2,073,314	2,229,345	2,786,233
Ontario	2,799,870	2,770,222	2,973,745	3,647,650
Manitoba	401,870	382,362	403,272	453,637
Saskatchewan	419,973	404,631	416,793	442,198
Alberta	552,164	534,870	567,416	722,196
British Columbia	740,229	731,438	804,108	961,011
Yukon Territory ⁴	6,051	5,760	6,563	8,638
Northwest Territories ⁵	8,663	9,403	9,563	14,350
Total	7,958,636	7,796,728	8,217,916	9,966,148

Corresponding statistics for the general election of 1962 are given in the 1972 *Canada Year Book*, p. 108.

¹ Unofficial figures. Official figures appear in the *Report of the Chief Electoral Officer*.

² Each voter in the double-member constituency of Queens County, PEI had two votes; in 1963, 26,472 voters on the list cast 42,703 votes; in 1965, 26,250 voters on the list cast 44,895 votes.

³ Each voter in the double-member constituency of Halifax, NS had two votes; in 1963, 122,846 voters on the list cast 183,402 votes; in 1965, 124,633 voters on the list cast 184,153 votes.

⁴ Electoral district of Yukon.

⁵ Electoral district of Northwest Territories.

4.6 Number of municipalities in Canada classified by type and size group, by province, as at Jan. 1, 1972

Type and size group	Nfld.	PEI	NS	NB	Que.	Ont.	Man.	Sask.	Alta.	BC	YT	NWT	Canada
TYPE													
Regional municipalities	—	—	—	—	75	39	—	—	—	28	—	—	142
Metropolitan and regional municipalities ¹	—	—	—	—	3	5	—	—	—	—	—	—	8
Counties and regional districts	—	—	—	—	72	34	—	—	—	28	—	—	134
Unitary municipalities	89	32	65	121	1,589	866	184	790	326	144	3	4	4,213
Cities	2	1	3	6	67	39 ²	5	11	9	31	2	1	177
Towns	87 ³	7	38	21	197	153	33	131	102	14	—	3	786
Villages	—	24	—	94	283	144	41	356	167	60	1	—	1,170
Rural municipalities ⁴	—	—	24	—	1,042	530	105	292	48	39	—	—	2,080
Quasi-municipalities ⁵	164	—	—	—	—	16	19	9	24	—	3	3	238
Total	253	32	65	121	1,664	921	203	799	350	172	6	7	4,593
POPULATION SIZE GROUP (1971 Census)													
Unitary municipalities	—	—	1	—	3	14	1	2	2	2	—	—	25
Over 100,000	1	—	2	1	10	12	—	—	—	6	—	—	32
50,000 to 99,999	1	2	15	6	72	59	3	5	12	29	1	—	205
10,000 to 49,999	87	30	47	114	1,504	781	180	783	312	107	2	4	3,951
Under 10,000	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	89	32	65	121	1,589	866	184	790	326	144	3	4	4,213

¹ Includes urban communities in Quebec; and Metropolitan Toronto, regional municipalities and the district municipality in Ontario.

² Includes the five boroughs of Metropolitan Toronto.

³ Includes four rural districts.

⁴ Includes municipalities in Nova Scotia; parishes, townships, united townships and municipalities in Quebec; townships in Ontario; rural municipalities in Manitoba and Saskatchewan; municipal districts and counties in Alberta; and districts in British Columbia.

⁵ Includes local government communities, local improvement districts and the metropolitan area in Newfoundland; improvement districts in Ontario and Alberta; local government districts in Manitoba; local improvement districts in Saskatchewan and the Yukon Territory; and hamlets in the Northwest Territories.

4.7 Canadian financial contributions to the United Nations

Agency	Percentage assessment or voluntary contribution (V)	Contribution (Cdn. \$'000)
UN regular budget (1972)	3.08	5,490
UNFICYP (1971)	voluntary (V)	1,600
Social and economic programs		
UNDP (1971)	V	16,185
UNHCR (1971)	V	400
UNICEF (1971)	V	1,500
UNRWA cash	V	650
commodities (1971)	V	700
UN Institute for Training and Research (1971)	V	60
UN Educational and Training Programme for Southern Africa (1971)	V	50
WFP cash (1972)	V	3,400
commodities (1971)	V	12,600
UN Fund for Population Activities (1971)	V	2,040
Congo Civilian Fund (1972)	V	250
Committee on Elimination of Racial Discrimination (1971)	V	3
Trust Fund for South Africa (1972)	V	10
UN Fund for Drug Abuse Control (1972)	V	150
Emergency-Relief Operation in Bangladesh		
UN Relief Operations in Dacca	V	1,500
UNHCR	V	4,300
UNICEF	V	2,492
WHO	V	50
Specialized agencies, IAEA and GATT		
ILO (1972)	3.36	1,170
FAO (1972)	3.86	1,538
WHO (1972)	2.78	2,492
UNESCO (1972)	2.91	1,188
ICAO (1972)	3.27	275
IMCO (1972)	1.20	22
ITU (1972)	3.75	273
WMO (1971)	2.62	86
UPU (1971)	2.63	62
IAEA regular budget (1972)	2.80	438
operational budget (1972)	V	70
GATT (1972)	5.84	261

The year in brackets after the organization or program shows the recipient's financial period for which the contribution was made.

Sources

4.1 Journals Branch, House of Commons.

4.2 Clerk of the Senate.

4.3 Office of the Representation Commissioner.

4.4 - 4.5 Office of the Chief Electoral Officer.

4.6 Public Finance Division, Institutional and Public Finance Statistics Branch, Statistics Canada.

4.7 Information Division, Department of External Affairs.

Chapter 5

Demography

Demography is that branch of science which deals with the growth, distribution, density, characteristics, vital statistics, migration, etc., of human population — in short, the life conditions of people. The present chapter is concerned with this subject as it applies to the population of Canada. It differs from previous editions of the Canada Year Book in bringing together in one chapter these various demographic elements. The subject is treated by providing first a brief picture of population growth in Canada, and then a summary of the most recent data from the 1971 Census on the distribution and demographic characteristics of the population, households and families (Sections 5.1 to 5.4). A second major part of the chapter is concerned with the vital processes (fertility, mortality, nuptiality) which play such a major role in shaping population trends and composition (Sections 5.5 to 5.8). Finally, there are the migration factors (immigration and emigration) which also have a significant influence on population change and structure (Section 5.9).

5.1 Population growth

The most fundamental fact about a population is its rate of growth which affects almost every aspect of the national life. The opening up of a new continent and the gradual evolution of an industrial and urban economy form the historical background for population growth in Canada. Several demographic elements have combined to produce this growth: births, deaths, immigration and emigration, which are the processes, or components, of population change.

5.1.1 The early period

The growth of Canada's population today is the culmination of a trend which began around the early 17th century with the arrival of the first French settlers. From this beginning, the population of the area now known as Canada (excluding Newfoundland) grew from a handful of colonists and an unknown number of native Indians and Eskimos in 1611 to about 2.4 million in 1851 and 3.7 million at the first Census of Canada in 1871. Rough estimates indicate there were about 136,000 Indians in 1851.

Growth rates in the early settlement years were very irregular; the immigrant population grew rapidly while the native population remained almost stationary or declined as a result of attrition from warfare and disease. Between 1681, when the number of settlers passed the 10,000 mark, and 1851 the average annual growth rate of the non-native population in each decade varied between 1.6% and 4.5%; the average annual growth rate for the whole period was 3.2%. The small size of the initial population and the continuous expansion into empty lands were contributing factors in the rapid growth rates in the early periods.

The decade 1851-61 was one of surging growth, second only to the growth rate in the first decade of the present century (Table 5.1). The average annual growth rate during this period was 2.9%, with about 23% of the total population increase due to net migration; over 350,000 immigrants arrived and there was very little emigration. A long period of slow growth followed and lasted to the beginning of the 20th century. Between 1861 and 1901 the average growth rate was closer to 1%, matched only by the rate during the depression period of the 1930s. This slow growth toward the end of the last century was due to heavy emigration resulting in a net migration loss (Table 5.2). Emigrants included elements of both the Canadian and foreign-born populations. While many immigrants continued to come to Canada during this period a large number of them re-emigrated to the United States where prospective settlers were offered more favourable economic and climatic conditions. The westward movement in the United States attracted not only settlers from every part of that country, but from Canada as well.

5.1.2 Recent trends

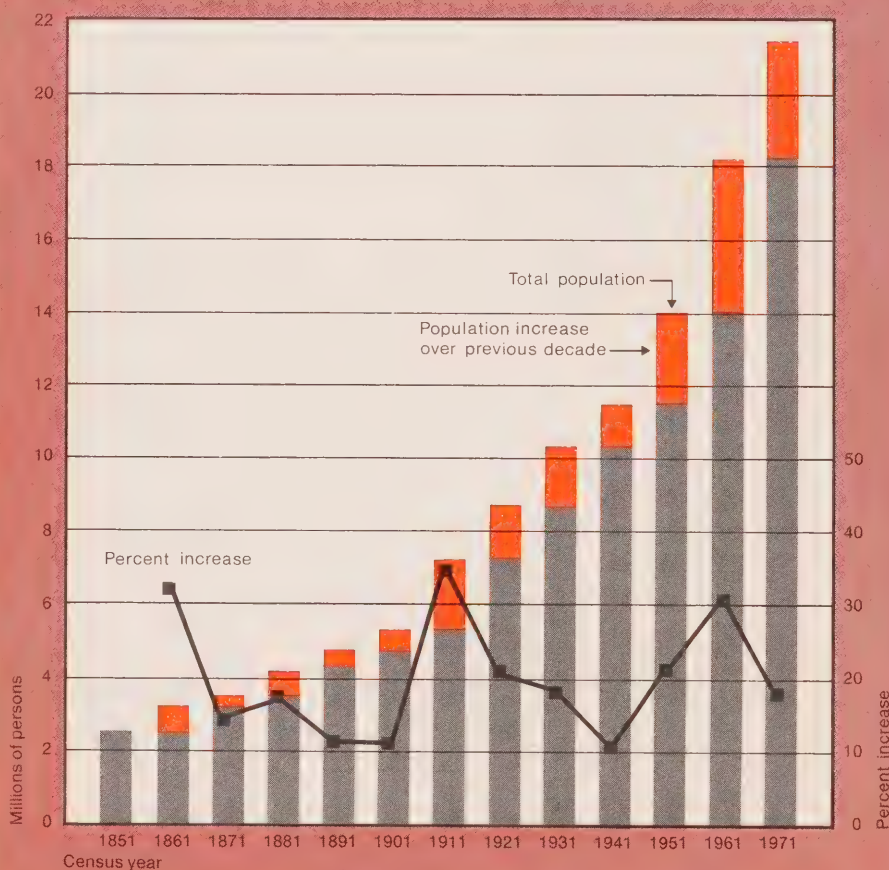
The beginning of the present century witnessed a flood of immigrants which helped to raise the growth rate to 3.0% per annum during 1901-11, the highest rate recorded since 1851. Over 1.5 million immigrants entered Canada in this decade, as many as had arrived during the previous 40 years. As a result, over 44% of the total population increase during this period was due to migration gain.

Following the phenomenal increase during 1901-11, the intercensal rate of increase dropped during each successive decade until it reached a low of 10.9% during 1931-41 when the reduced birth rates during the economic depression seriously affected population growth. Moreover, immigration during this period was negligible, and as a result there was a net migration loss of about 92,000 persons.

After 1941, the population again registered an accelerated growth, reaching a near-record rate of expansion of 30.2% in 1951-61, nearly three times the rate of increase in 1931-41. Part of the accelerated increase in population after 1941 was accounted for by the addition of Newfoundland in 1949 but the surge in birth rates (commonly referred to as the "baby boom") and the upswing in immigration during the immediate postwar years were the main factors of growth during the period.

After 1956 a steady decline in population growth occurred, reaching a rate of 1.5% per annum in 1966-71. This gradual fall in the growth rate in recent years — the lowest except the depression decade — has evoked special interest mainly because it occurred after the growth

Population growth in Canada, 1851-1971



rate reached a peak of 3.3% in 1956-57 and at a time when the economic outlook was favourable for high growth rates. The current annual growth rate (1971-72) is estimated to be about 1.2%. In absolute numbers, between 1966 and 1971 the population increased by 1,553,000, or 310,000 a year, which was about 25% lower than the increase during 1951-56. The sharp reduction in population growth in recent years due to the marked decline in birth rates and lower immigration has caused speculation on the possibility of Canada's population growth approaching the zero level in the very near future.

5.1.3 Future prospects

The dominant component of population growth in Canada since 1851 has been natural increase. This trend is likely to continue in the future with a modest contribution from migration. Of the two components of natural increase (births minus deaths), the birth rate will continue to be the dynamic and crucial factor of growth. Moreover, fluctuations in birth rates can create major economic and social problems as society adjusts itself to the effects of such fluctuations. For example, although the postwar "baby boom" is long past, society is now feeling the impact of this generation on the labour market and other aspects of the national economy. Similarly, problems associated with the sharp drop in the birth rate since 1957 are being felt, for example, by school systems as smaller numbers of children enter school.

Because of the importance of the fertility factor, the tempo of future growth depends mainly on whether the current total fertility rate of 2.19 births (1971), which is close to the "replacement level" of 2.13 births under current mortality conditions, will remain constant, fall or rise in future. A fertility rate close to the replacement level does not mean that Canada will soon reach zero population growth. Calculations show that even if immigration ceased, and the average fertility rate were only 2.13, the population would continue to grow until about the year 2040, when birth and death rates would each stabilize at about 13 per 1,000 population. This long delay in achieving zero growth may be attributed to the current high percentage of young people who are moving into the child-bearing age groups.

Table 5.3 summarizes the results of two series of population projections for Canada prepared under different assumptions of mortality, fertility and migration. Series A uses the lowest fertility assumption as stated in the Table with constant mortality level and zero net migration. Under these assumptions, the total population will increase from 21.6 million in 1971 to 24.5 million in 1986, and will reach 26.5 million by 2001. Because the assumed fertility rate does not reach the lowest point until 1985, the full impact of fertility decline on population growth becomes evident only thereafter. The annual growth rate will be lowest at 0.3% by 2001. The population will become more aged with declining proportions of young people and increasing proportions of adult and old-age population.

Series B gives a higher and more realistic projection taking into consideration the more likely changes in mortality, fertility and migration. As described in Table 5.3 this projection yields a total population of 26.5 million by 1986 and 31.4 million by 2001. In terms of rates, the annual growth increases from 1.3% in 1971 to 1.4% in 1986, and then it decreases, reaching 1.0% by 2001. The growth rate is expected to be higher than the 1971 rate until 1986 when the fertility rate will reach the lowest level assumed.

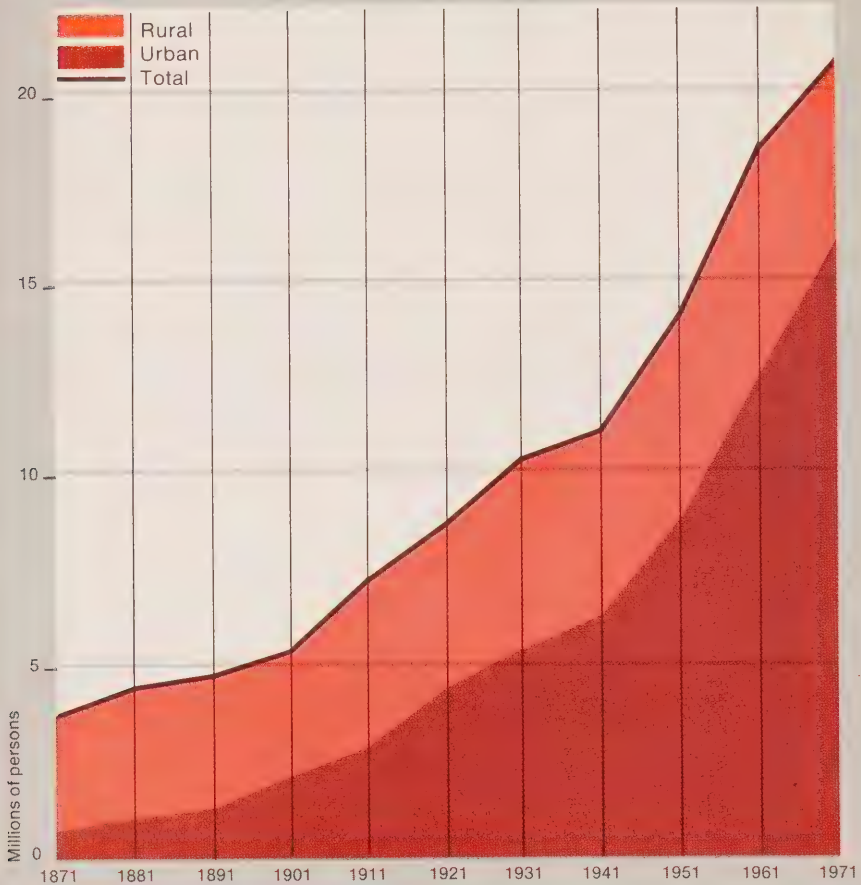
5.2 Population distribution

5.2.1 Provincial and sub-provincial areas

Decennial and quinquennial censuses of Canada make possible periodic assessments of the size and location of the nation's human resources. They provide data on the distribution of population for many types of geographical, political, and statistical entities. Used as benchmarks, the census counts enable annual estimates to be made for some of the larger areas (e.g., provinces, counties, metropolitan areas). A small selection of these data is presented in this Section, embodying results of the 1971 Census and later estimates for 1972 where applicable.

Provincial trends, 1951-71. The growth of Canada's population has not been uniformly distributed among the provinces. The distributions for the 1951-71 period are presented in Table 5.4 and they show substantial variations in rates of growth. This is evident from the number of provinces with higher or lower growth rates compared with the national average. Ontario, British Columbia, Alberta and the Northwest Territories had growth rates higher

100 years of population growth



than national figures in all five-year periods between 1951 and 1971. However, a decline in the rate of growth over the past 20 years occurred in all provinces as birth rates began to fall in the mid-1950s. The most spectacular change took place in Quebec where the rate of growth declined by about 70% between 1951-56 and 1966-71 (i.e., from 14.1% to 4.3%). The growth rate in Quebec in 1966-71 was less than half of the rate during the preceding five-year period.

The slow population growth of 1966-71 was not shared equally among the provinces. The lowest rates occurred in the Atlantic Provinces, Quebec, Manitoba and Saskatchewan. Saskatchewan registered an actual decline in population during this period. British Columbia had the highest growth rate (16.6%) in 1966-71, followed by Alberta and Ontario. The uneven rates of increase among the provinces in 1966-71 imply that during this period net migration reinforced the natural growth of population in Ontario, Alberta and British Columbia and depressed it in all others (see Table 5.5).

Provincial estimates, 1972. In addition to the five-year census counts, estimates are constructed for the total population of Canada and for each province on both an annual and

quarterly basis. The estimates of population begin with the preceding census counts, to which are added the births of each year and from which the deaths are subtracted; immigrants are added and an estimate of emigrants subtracted. Family allowance statistics showing the number of migrant families by province are used in estimating interprovincial shifts in population. Finally, the next succeeding census serves as a basis for revision of all annual estimates of each intercensal period.

Table 5.6 shows the revised annual population estimates by province for the years 1967 to 1970, and the provisional estimates for 1972. Included in the Table are the actual enumerated counts for the two "benchmark" census years of 1966 and 1971. The estimate for Canada of 21,830,000 population at June 1, 1972 is the result of adding 351,000 births and 118,000 immigrants to the June 1, 1971 Census figure of 21,569,000 and then subtracting 161,000 deaths and a residual of 47,000 representing mainly emigrants.

Cities, towns and villages. As at June 1, 1971, some 65.4% of Canada's population lived in 2,120 centres classified as incorporated cities, towns and villages. These are grouped into 13 broad size categories in Table 5.7. There were only two cities within whose incorporated boundaries the population was over 500,000 (Montreal and Toronto), representing a combined 8.9% of the total population. At the other end of the scale, 1,093 or one half of all incorporated cities, towns and villages had less than 1,000 population, but together they accounted for only 2.1% of Canada's population.

Canadian cities and towns having a population of over 50,000 in 1971 are listed in Table 5.8 together with figures for 1961 and 1966. The date of incorporation to their present status of a city or town is indicated also. Since the population counts for the three census periods relate to the incorporated limits of the city or town at each of these dates, the growth figures are not strictly comparable in those instances where boundary changes due to annexations, etc., have taken place. Asterisks in the table indicate all cases where such changes have occurred.

Metropolitan areas. For census purposes a metropolitan area represents the main labour market of a continuous built-up area having a population of 100,000 or more. The growth of each of the 22 census metropolitan areas can be observed over the period 1951-71 in Table 5.9 where the populations of these areas in earlier censuses have been adjusted to conform to the boundaries delineated for the 1971 Census. For many purposes these figures, which essentially measure the size of Canada's major urban agglomerations, are more meaningful than the data relating only to the incorporated limits of the central cities shown in Table 5.8.

The proportion of Canada's population living in the major metropolitan centres has been steadily increasing in recent years to the point where over one half (55.1%) now reside within the boundaries of the 22 metropolitan areas as defined for the 1971 Census. Calgary showed the highest rate of growth in the most recent 1966-71 period at 22.1%, followed by Edmonton at 16.5%. However, the greatest actual gains were registered by Toronto which increased by 338,000 and by Montreal which gained 172,000. At the same time, Vancouver joined these two metropolitan centres in becoming the third urban agglomeration in Canada to pass the 'over-a-million' population mark.

Because of the growing interest in the expanding population of the larger metropolitan areas of Canada, a series of intercensal estimates was begun in 1957. Table 5.9 includes these estimates for 1972 along with the census counts of 1951-71. As in preparation of intercensal population estimates for provinces, the births occurring in the metropolitan areas between June 1, 1971 and June 1, 1972 were added to the population at the census date and deaths subtracted. Immigrants over this period reporting these metropolitan areas as places of destination were added and allowances made for losses in population by emigration. Also, the net in-movement caused by internal migration was calculated from family allowances and other data.

5.2.2 Population density

At six persons per sq mile in 1971, Canada's crude or average population density still ranks among the lowest in the world. Table 5.10 shows that if the Yukon Territory and Northwest Territories were omitted from this calculation, there would be ten persons per sq mile in 1971 compared to eight in 1961 and six in 1951. However, such average density figures over all types of land terrain and open spaces in the country or in individual provinces obscure the high urban densities which can reach close to 20,000 persons per sq mile as in the over-all

Percentage increase of the population of Canada and the metropolitan areas 1966-72

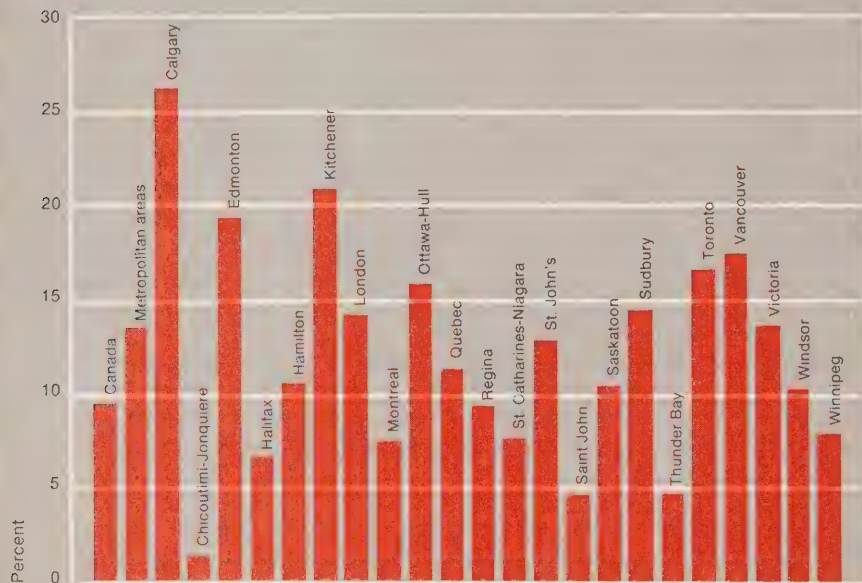


figure for the cities of Montreal and Toronto. Moreover, the highest provincial densities are not necessarily found among the provinces with the largest populations. For example, the highest average density of any province is that of Prince Edward Island (51 persons per sq mile), which has the smallest population and represents an anomaly resulting from its very limited land area rather than from heavy concentrations of population. In contrast, the far more populous province of British Columbia, with its vast mountainous regions and areas of sparse population, has an average density of only six persons per sq mile.

5.2.3 Urban and rural

The urban population was defined in the 1971 Census as all persons living in incorporated cities, towns and villages with a population of 1,000 or over, as well as in unincorporated places of 1,000 or over having a population density of at least 1,000 per sq mile. Also considered as urban were the built-up fringes of these cities, towns and villages if they met the same criteria of population and density. All the remaining population was classified as rural.

Table 5.11 indicates that over three quarters (76.1%) of Canada's population is living in an urban environment, with the degree of urbanization on a provincial basis ranging from 38.3% in Prince Edward Island to 82.4% in Ontario. In comparison with the national average, only two provinces — Ontario and Quebec — were more highly urbanized. The proportion of urban population fell below 50% in just one case — Prince Edward Island.

The rural population, which accounted for 23.9% of the Canadian total in 1971, is further classified in Table 5.11 as either non-farm or farm. The rural farm population is defined for census purposes as those persons living in rural areas on an agricultural holding of one or more acres with sales of agricultural products amounting to \$50 or more in the previous year. Under this definition, the category of rural non-farm in 1971 accounted for 17.3% of the total population, compared to 6.6% for the rural farm segment.

5.3 Demographic and social characteristics

This Section provides data on the general demographic and social characteristics of the population which were available at the end of 1972 from the most recent 1971 Census of Canada. In certain instances, comparisons with earlier census periods are included. Where they are not, such figures can generally be obtained from the relevant reports of previous censuses.

5.3.1 Sex, age and marital status

The age and sex composition represents the most fundamental of the attributes of a given population. Along with marital status, these variables are primarily a function of vital trends: births, deaths, marriages, and dissolutions of marriages. Social and economic factors, by their effects on vital events and migration, influence these characteristics as well. An unbroken series of census data is available as far back as the first Census of Canada in 1871, although only recent trends are summarized here.

Sex ratios. The relatively short demographic history of the Canadian population has been characterized by an excess of males, although this excess has nearly disappeared in recent years. Over the past century the sex ratio (i.e., number of males per 100 females) for Canada reached a peak of 113 in 1911 following a decade of heavy immigration in which males have traditionally predominated. By 1971 the sex ratio had almost evened out at 100.2 which represented only 22,425 more males than females in a total population of over 21.5 million (Table 5.12). In the older settled provinces east of Manitoba the sex ratio has varied between Nova Scotia's 104 in 1911, and Quebec's and Ontario's 1971 ratio of 99. In the western provinces, which were being rapidly settled in the early years of this century, the sex ratio has ranged between Alberta's 1911 high of 149 and Manitoba's 1971 figure of 100.

Age structure. The age composition of the Canadian population is, of course, a reflection of past trends in vital rates and immigration. The lower birth rates of the 1961-71 period compared to those of the 1950s have had a tremendous impact on the population under 15 years of age in 1971. This age group decreased by 211,000 or 3.2% between 1966 and 1971 compared with a gain of 399,800 or 6.4% in the 1961-66 period. As a result the proportion that this age group formed of the total population fell from 34.0% in 1961 to 29.5% in 1971 (Table 5.13).

The population of working age (generally regarded as those 15-64) increased substantially, with a gain in excess of 1,559,000 or 13.1% in the 1966-71 period. This age group comprised 62.3% of the total population in 1971 compared with 59.4% of the total population in 1966 and 58.4% in 1961. Of the total 1961-71 increase in the 15-64 age group, 49.8% of the gain occurred in the 15-24 age group. This young adult age group in 1971 is, of course, the cohort of children born in the high-birth-rate years following World War II. The proportion of persons 65 years of age or over was approximately the same (roughly 8%) in 1971 as in 1961 and 1966.

The latest estimates of the population by age group and sex are shown in Table 5.14 for Canada and the provinces as at June 1, 1972. The method followed in preparing these estimates was much the same as that used in calculating the population estimates described in Section 5.2.1. These estimates are subject to revision when data from the next census in 1976 become available.

Marital status. Analyses of the trends and size of the single, married, widowed and divorced segments of the population assume their most revealing aspects when these categories are observed in relation to their distributions at different age levels and by sex. Table 5.15 shows these three fundamental demographic characteristics in relationship to each other, based on results of the 1971 Census. The figures show, for example, such imbalances as the far greater numbers of single males than single females at the younger age levels and the reverse for widows as compared to widowers in the older age groups. The former condition results from the generally earlier ages of marriage for females, and the latter is due to the longer life expectancy of females as well as the greater tendency for widowers to remarry.

Among the recent trends in the marital status structure is the steady decrease, since 1951, in the number of married females in the child-bearing ages in relation to the total married

women of all ages. This is possibly one of the contributing factors to the sharply declining birth rates in recent years. In 1971, 59.7% of all married females were in the age group 15-44, compared to 61.2% in 1966, 62.9% in 1961, and 64.0% in 1951.

One of the most striking changes revealed by the 1971 Census compared to the previous one in 1966 is the large increase in the number of divorced persons over the 1966-71 period, reflecting in part recent relaxations in the divorce laws. Divorced persons of all ages in 1971 increased to almost three times the size of the 1966 figure (from 64,776 to 175,115). The age group 15-24 experienced the greatest relative increase, but the actual numbers were small compared to most older groups. Moreover, the total number of divorced persons still represented fewer than 1% of Canada's population in 1971. (See also Section 5.8.2.)

5.3.2 Language characteristics

In the 1971 Census, three questions were asked on the languages of the Canadian people. Two of these represented the more traditional census inquiries: one on mother tongue (the language first spoken in childhood and still understood) and the other on official language (the ability to speak English, French, or both languages). These were augmented in 1971 by a third question concerned with the language most often spoken at home. Final figures on official language and the new inquiry on language spoken at home were not available in time for this edition but may be obtained from relevant reports of the 1971 Census. Preliminary data are given in Tables 5.16 and 5.18.

Mother tongue. Summary figures on mother tongue are presented in Table 5.16 which shows the principal languages reported under this concept at the 1971 Census with comparative figures for 1961. It may be noted that the proportion of the Canadian population reporting English mother tongue increased from 58.5% in 1961 to 60.2% in 1971, while the percentage reporting French declined from 28.1 to 26.9. Italian, Greek, Chinese, and Portuguese were others showing significant advances in the ten-year period, while Ukrainian, German, Netherlands, Polish and Yiddish were among the larger groups registering declines.

In addition to providing information on the basic linguistic affiliations of the Canadian people, mother tongue data obtained at decennial censuses form the statistical basis for the creation of Bilingual Districts under the Official Languages Act. For this reason, Table 5.17 is of interest in showing the number and proportion of the population reporting English or French as their mother tongue, by province. The relative gains in English mother tongue over the 1961-71 period occurred mostly in the western provinces at the expense of other mother tongues such as Ukrainian, German and Polish, as the descendants of earlier immigrants now report English as their mother tongue to a greater extent than in previous decades.

Official language. Table 5.18 shows preliminary 1971 Census figures on the population reporting the ability to speak one or both of Canada's two official languages, with comparative data for 1961. This Table indicates that in 1971 a total of 67.1% were able to speak English only, 18.0% French only, and 13.4% were bilingual. These ratios represent a slight increase in the proportion of the population able to speak both English and French over 1961, when the percentage was 12.2.

Language spoken in the home. The new inquiry on language most often spoken at home was introduced in the 1971 Census on the recommendation of the Royal Commission on Bilingualism and Biculturalism and other groups. It adds a new dimension and insight into the languages of Canada since some persons, particularly immigrants, do not use either of the two official languages as the one they speak most often in their homes. Conversely, many others with a non-English mother tongue may no longer employ their mother tongue for this purpose. Preliminary results of the 1971 Census in Table 5.16 indicate that 67.0% of the population spoke English most often in their homes, whereas only 60.2% reported English as their mother tongue.

5.3.3 Ethnicity, religion, birthplace

A population made up of diverse ethnic groups, religious affiliations and countries of birth gives rise to political, social and economic problems quite different in nature from a country with a more homogeneous composition. It is equally true that different backgrounds lend variety and diversity to the national life. Because of the varied nature of Canada's population, the measurements provided by decennial censuses on such subjects as ethnic and religious composition are of widespread interest and in continuous demand. Since the final

1971 Census results were not available in time for this edition, Tables 5.19 to 5.21 show preliminary figures rounded to thousands. Final data for 1971 are available in the relevant census reports, as indicated in the footnotes to the Tables.

Ethnic groups. The ethnic composition of the population of Canada has changed considerably over the years because of many factors, including differences in the flow and source of immigrants. Trends in recent years have been characterized by a gradual decline in the proportions of British Isles groups and a corresponding increase in other European ethnic groups other than French. For example, the former groups had dropped from 57.0% of the total population in 1901 to 44.6% by 1971, whereas other European groups rose from 8.5% to 23.0%. The French ethnic group remained relatively stable, starting at 30.7% in 1901, and moving irregularly lower to 28.7% by 1971. Table 5.19 provides preliminary 1971 figures for the larger ethnic groups in Canada, together with earlier data from the two previous decennial censuses in 1951 and 1961.

Religious denominations. Census figures on religious denominations do not measure church membership or the degree of affiliation with a particular religious body. Respondents were requested to answer the question "What is your religion?" and to enter if possible a specific religious denomination, sect or community. Thus, the census data on this subject relate to the religious denominations to which persons state they belong, adhere or favour, with the opportunity to report "no religion" if so desired. As shown in the preliminary 1971 figures in Table 5.20, three out of every four persons in Canada in 1971 reported one of the three numerically largest denominations — Roman Catholic, United Church or Anglican. Largest relative gains since 1961 occurred in such groups as Jehovah's Witnesses and Pentecostal. None of the major denominations registered actual declines in the 1961-71 period, but the Anglican, Baptist, Lutheran, Presbyterian and United Church groups were among those showing losses relative to the total population.

Country of birth. The proportion of the population born outside Canada has ranged during the present century from a high of 22% throughout the period 1911-31, following the heavy waves of immigration in the early decades, to a low of 15% in 1951 following a period of lower immigration and rising birth rates. Persons born in the United Kingdom comprised over 11% of the population in 1911 and 1921, but this percentage declined gradually to 4.3% by 1971 in the face of the rising proportions of Canadian-born and immigration from other European countries. Persons born in the latter countries rose from 5.6% of Canada's population in 1911 to 7.8% in 1971 (Table 5.21).

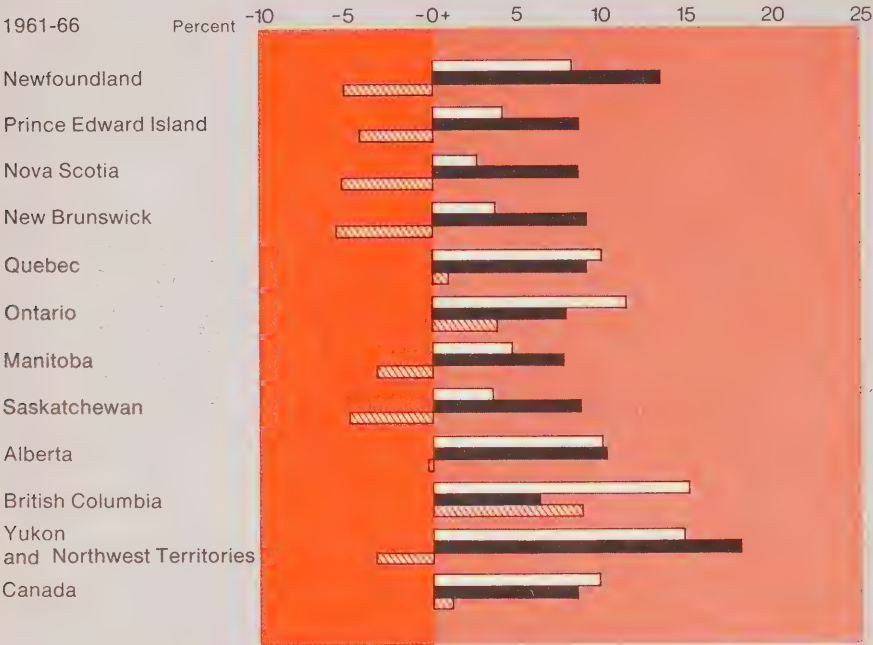
5.3.4 The native peoples of Canada

Many centuries before the first European settlers arrived on what is now Canadian soil, this vast country had received immigrants in the prehistoric period. Present-day Eskimos and Indians are the descendants of these early settlers but as a result of heavy immigration by other groups they now represent less than 2% of Canada's population. Administration relating to the affairs of the Indian and Eskimo peoples is described in Chapter 4. Demographic data on their numbers and locations can be obtained from reports of the 1971 Census of Canada, preliminary figures of which indicate a total of 297,000 Indian people and 18,000 Eskimo. The former figure includes both registered Indians (232,000) and non-registered (65,000).

From a later source, there were 257,619 persons registered as Indians by the Department of Indian Affairs and Northern Development as of December 31, 1971. These are persons who are entitled to be so registered in accordance with the terms of the Indian Act. They comprise 560 bands who occupy or have access to some 2,200 reserves having a combined area of about 6.3 million acres. Membership of these bands is distributed among the provinces and territories as shown in Table 5.22. The 29 Indian bands in the Yukon Territory and Northwest Territories are located in 59 settlements that have not been formally designated as reserves. No permanent residents of Newfoundland are registered under the Indian Act.

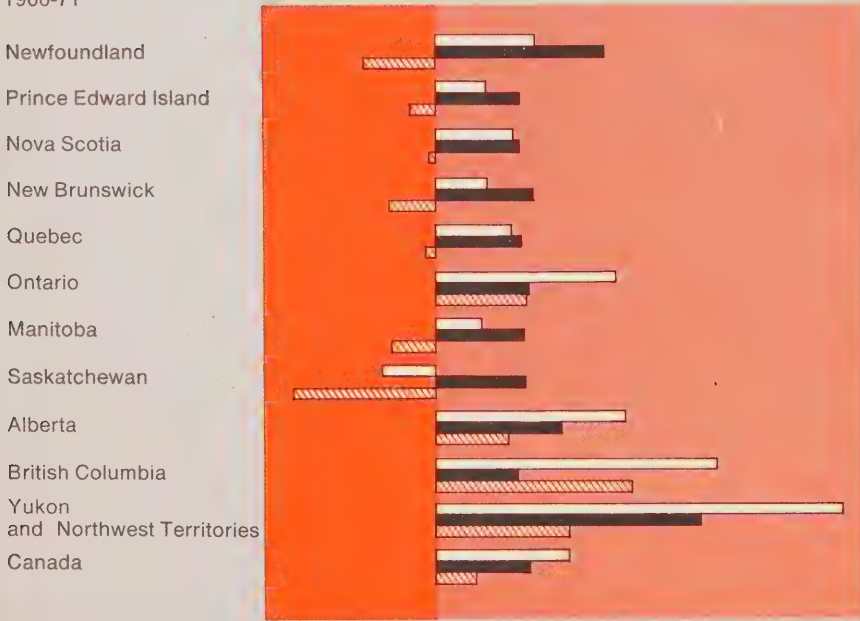
About two thirds of Canada's roughly 18,000 Eskimos reported in the 1971 Census live in communities in the Northwest Territories, and the remainder mainly in Arctic Quebec (3,800), Labrador (1,000), and Northern Ontario (800). Similar to the rest of Canada the Eskimo birth rate is now declining. In 1971 the rate for the Eskimo population in the Northwest Territories was 38 per 1,000 compared with the Canadian average of 17 per 1,000.

Percentage population increases by provinces,
1961-66 and 1966-71



Population growth = Natural increase ± Net migration

1966-71



5.4 Households and families

This Section relates to some of the basic statistics on households and families collected in the 1971 Census. More detailed information may be found in the 1971 Census reports. Of particular interest will be the reports pertaining to households and families to be published in a series of profile studies of Canada's human resources as part of Volume V of the 1971 Census.

5.4.1 Household size and types

A household, as defined in the census, consists of a person or a group of persons occupying one dwelling. It usually consists of a family with or without lodgers, employees, etc. However, it may consist of a group of unrelated persons, of two or more families sharing a dwelling, or of one person living alone. Every person is a member of some household and the number of households equals the number of occupied dwellings. The statistics presented in this Section pertain to private households only. Collective households such as hotels, motels, institutions of various types (usually considered to contain ten or more unrelated persons) have been excluded because their significant dissimilarities from private households could distort the household picture with respect to size and composition.

The number of private households in Canada increased to 6 million in 1971 from 4.5 million a decade earlier, a gain of almost one third. The corresponding population rate of increase was considerably lower at 18%. This difference in growth rates reflects the marked rise in recent years in the number of households consisting of only one or two persons. Generally speaking, the distribution of households by province in 1971 closely paralleled the population distribution: Ontario had the greatest number of households at 2.2 million, followed by Quebec and British Columbia which had 1.6 million and 668,000 households, respectively.

Households by size. Table 5.23 shows the total number and the average size of households by province for the census years 1961, 1966 and 1971. In the 1971 Census, the average size of Canadian households was 3.5 persons as compared to 3.7 persons in 1966 and 3.9 persons in 1961. In all these censuses, the average number of persons per household was highest in Newfoundland. While the decline in the average size of households during the period 1961-66 was attributable to mainly two provinces, New Brunswick and Quebec, a further drop in the average size during the period 1966-71 was realized in all provinces.

Households containing families. All private-type households are divided for census purposes into two basic categories: family households and non-family households, depending upon whether or not there is a family (or families) present in the household. Table 5.24 shows the distribution of households on this basis for census years 1961, 1966 and 1971.

Family households, although they increased in number from 3.9 million in 1961 to almost 4.4 million in 1966 and to 4.9 million in 1971, proportionately dropped from 86.7% in 1961 to 84.5% in 1966 and to 81.7% in 1971. The proportion of households consisting of two or more families dropped from 3.7% in 1961 to 2.0% in 1971, which is usually an indication of a decrease in the incidence of over-crowding in households. On the other hand, non-family households increased both in number as well as in proportion to the total number of households. This increase is solely attributable to the increase in the proportion of one-person households from 9.3% in 1961 to 11.4% in 1966 and 13.4% in 1971. Thus, new family formation alone was not responsible for the over-all increase in the number of households; some family persons and families who previously shared accommodation with other families now maintained their own households.

Households by age and sex of head. The distribution of household heads by age and sex for the census years 1961, 1966 and 1971 is given in Table 5.25. Of particular interest is the upward trend in households headed by young males of under 25 years of age. Although total households increased by 16.6% between 1966 and 1971, the number of households with heads under 25 years of age grew by 54.0%, reaching 414,470 in 1971 from 269,065 in 1966. By province, this group increased by as much as 72.6% in Manitoba and 63.0% in Newfoundland. Quebec registered the largest growth in the number of households with heads 70 years of age or over, increasing 17.5% to 125,095 in 1971 compared to 106,459 in 1966. Nationally, however, the proportion of households with heads 70 and over declined slightly to 10.3% of all households from 10.7%.

5.4.2 Family size and composition

A family, as defined in the Canadian census, consists of a husband and wife with or without unmarried children, or a parent with one or more unmarried children, living together in the same dwelling. Adopted children and stepchildren have the same status as own children.

The number of families in Canada increased to 5.0 million in 1971 from 4.5 million in 1966 and 4.1 million in 1961, a gain of approximately one fourth over the decade. Following the patterns of provincial population growth, and particularly reflecting the factors of migration, the largest rate of increase in the number of families occurred in British Columbia (35.4% in the 1961-71 period), followed by Alberta (25.0%), and Ontario (24.5%).

Families by size. The total number and average size of families are given in Table 5.26 by provinces for the census years 1961, 1966 and 1971. Although the average size of the Canadian family remained the same at 3.9 persons between 1961 and 1966, it dropped to 3.7 persons between 1966 and 1971 as declines in birth rates across the nation began to be reflected in census family-size trends. Quebec and New Brunswick experienced the largest reductions in average family size, decreasing from 4.2 persons in 1961 to 3.9 in 1971 for Quebec, and from 4.3 to 4.0 for New Brunswick.

Families maintaining own households. Families "maintaining their own households" are those in which the head of the family is also the head of the household. Families not maintaining their own household fall into two census sub-categories: families related to the head of the household, and non-related lodging families. The few who do not fit either of these sub-categories are mostly families of employees living in their employer's household.

As can be seen from Table 5.27, 96.6% of the Canadian families in 1971 maintained their own households. These families increased over earlier censuses both in number as well as in proportion to the total number of families. The majority of the remaining families were related families, characterized by the fact that they were mostly small in size, usually two persons (e.g., the daughter and son-in-law of the household head) and the head of the family was under 25 years of age. On the other hand, lodging families, although increasing slightly in number, constituted a very low proportion of 0.8% unchanged from the 1966 Census.

Husband-wife families. For the analysis of family data, a useful classification is the subdivision into husband-wife families and one-parent families. Table 5.28 shows the distribution of both types of families by age of family head. In the case of one-parent families, the age of head is further classified into male and female heads. In the case of husband-wife families, this type of subdivision is not necessary, since for statistical tabulating purposes, the husband was considered to be the head of the family in 1971 and earlier censuses.

Although between 1966 and 1971 the proportion of husband-wife families dropped slightly, in actual number they increased. They still constituted a predominant proportion (90.6%) of total Canadian families. On the other hand, as can be seen from Table 5.28, the majority of one-parent families were headed by females. During the decade 1961-71, these families increased both in number and proportion from 6.6% in 1961 to 7.4% in 1971. This reflects a slight increase in the incidence of "broken" families in Canada, partially perhaps as a result of recent changes in divorce laws because the proportion of females heading such families increased in the age groups 25-34 and 35-44, and these are the ages in which divorces most frequently take place.

Families by mother tongue of head. Table 5.29 shows the distribution of families by the mother tongue of family head, by province. For census purposes, mother tongue is defined as "the first language learned that is still understood". As expected, the proportion of family heads reporting English, French, or other mother tongue in the 1971 Census showed a similar pattern to that for the population as a whole. For example, 58.5% of the Canadian population reported English as the mother tongue, as compared with 57.2% of all family heads. The corresponding proportions for French mother tongue were 28.1% and 25.6%, with the lower ratio for family heads being the result of the slightly larger average size of French-speaking families. Conversely, other mother tongues were reported by 13.5% of the total population, and by 17.2% of all family heads.

Children in families. There were 8.9 million children in families in 1971. These are limited by definition to children never married and under 25 years of age who were living with their parents or guardians at the time of the census. The above number of children are classified in

Table 5.30 into selected age groups which roughly correspond to pre-school-age children (under six years), those of elementary school age (6-14), those at the secondary school level (15-18), and those of college or working age (19-24).

Declining birth rates are reflected dramatically in the proportionate increases of children in families during the 1966-71 period. The 19-24 age group of children in families increased by 20.7% over the five years, the 15-18 group by 16.7%, the 6-14 group by only 5.9%, while those under six years of age declined by as much as 16.2%. Children in families for all age groups combined advanced in numbers by 11.3% (7.8 million to 8.6 million) in the 1961-66 period, but by only 2.3% (8.6 million to 8.8 million) during 1966-71.

5.5 The vital components of population change

Vital statistics are an important key to the interpretation of population change. They provide a measure of the pace at which the population is increasing by natural means (births minus deaths) and the rate at which women are marrying and reproducing. As such they do much to explain the changing patterns of population growth and composition described in earlier sections of this Chapter. These vital processes of population change are reflected in records of births, deaths, marriages and divorces registered in the provinces and territories of Canada. The continuity of such data gives a constant guide to the planning, operation and evaluation of many national activities, particularly in the fields of public health, education, community planning and various types of business and industrial enterprise.

5.5.1 History of vital statistics

The history of the collection of vital statistics in Canada is described in the *1948-49 Canada Year Book*, pp. 185-188. Most trend tables on this subject in the present edition are for recent years back to 1951. A historical summary of vital statistics data for Canada and the provinces back to 1921 is contained in the Vital Statistics *Preliminary annual report* (Catalogue No. 84-201). Some rough estimates of birth, natural increase, and death rates back to the mid-1800s by ten-year periods are contained in Sections 5.6.1, 5.6.3, and 5.7.1, respectively.

5.5.2 Summary of principal data

Table 5.31 provides a summary of the principal vital statistics by individual years from 1966 to 1971 for Canada, the provinces and territories, with comparative figures by five-year periods back to 1951-55. Table 5.32 shows similar data for urban centres of 50,000 population and over for 1971 with comparative averages for 1966-70 and 1961-65. More detailed information on all aspects of current vital statistics as summarized in these tables, including analyses of recent trends, appear in the annual report *Vital statistics of Canada* (Catalogue No. 84-202), *Causes of death* (Catalogue No. 84-203), and in other regular and special reports. In addition, certain unpublished data are available on request.

5.6 Fertility

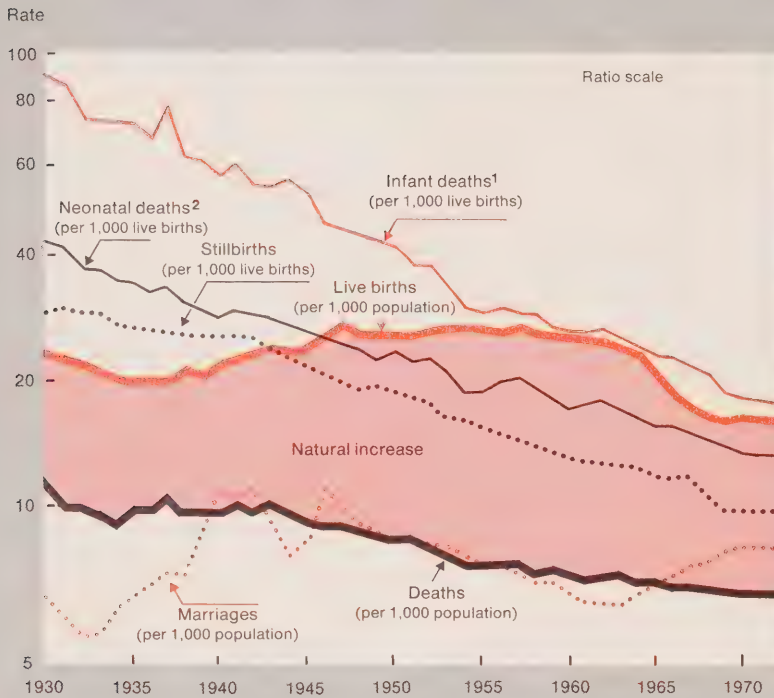
Of all the various interactions of the demographic components which produce population change (fertility, mortality, nuptiality, immigration, emigration), none exerts greater influence or is more crucial in its effects than the rate of reproduction or fertility. The nation's death and immigration rates have become far more stable by comparison, and it is the birth and fertility rates that will continue to be the dominant factor in the foreseeable future in shaping the demographic structure of Canada (see Section 5.1).

5.6.1 Births

No accurate figures on Canadian crude birth rates are available prior to 1921, when the annual collection of official national figures was initiated. However, the following rough estimates of the average annual crude rates of live births (i.e., per 1,000 total population) for each ten-year intercensal period between 1851 and 1921 may be inferred from studies of early Canadian census data: 1851-61, 45; 1861-71, 40; 1871-81, 37; 1881-91, 34; 1891-1901, 30; 1901-11, 31; 1911-21, 29.

The general trend in the national crude birth rate since 1930 is shown in the accompanying chart, and that since 1951 in Table 5.31. The annual rates declined gradually but steadily from 29.3 in 1921 to a record low of 20.1 in 1937, recovered sharply in the late 1930s and during World War II to 24.3 in 1945, and following the War rose to a high of 28.9 in 1947. Between 1948 and 1959, the rate remained remarkably stable at between 27.1 and 28.5. Between 1966 and 1970 the rate levelled off somewhat between 19.4 and 17.5 but declined to an all-time

Vital statistics rates, 1930-71



1. Deaths under one year of age.
2. Deaths within the first four weeks of birth.

record low of 16.8 in 1971. Part of this decline is attributable to the fact that the crude birth rate is based on total population, which now includes larger proportions of "non-reproductive" population. Even if the annual number of births were to remain stable, the net effect of an increase in population would be a declining crude birth rate.

The rates in most provinces followed trends very similar to the national trend but showed some regional differences in recent years. Although all provinces had record high rates immediately following World War II, during the 1951-55 period average birth rates in Ontario and the western provinces were higher than during 1946-50 and those for Quebec and the Maritime Provinces were lower. In fact, Ontario, Alberta and British Columbia had record high crude birth rates during the 1956-60 period. In 1971, Quebec, Ontario, Saskatchewan, Alberta and British Columbia had record low rates.

It is often erroneously assumed that Quebec has not only the largest number of births annually but the highest rate in Canada. Since the late 1930s or early 1940s Newfoundland, in some years New Brunswick and, since 1953, Alberta have had higher birth rates than Quebec. Table 5.31 shows that six provinces — Newfoundland, Alberta, New Brunswick, Prince Edward Island, Nova Scotia and Saskatchewan, in that order — had higher crude rates than Quebec or Ontario in 1966, followed by Manitoba and British Columbia, and that, since 1968, Quebec has had the lowest crude birth rate in the country. However, since these crude rates are based on the total population they do not reflect the true fertility of the women of reproductive ages in the different provinces or the number married within these reproductive ages. A more

accurate measure of the true birth rate is one based on the number of women between the ages of 15 and 45 (see Table 5.41 and Section 5.6.2).

Also contrary to popular impression, since 1953 more babies were born each year in Ontario than in Quebec; for example, in 1971, 130,395 babies were born to Ontario mothers as compared with 89,210 to Quebec mothers. Altogether, 362,187 children were born alive in Canada in 1971, 117,088 or 25% fewer than the record 479,275 born in 1959. Despite an increase since 1966 in the number of women of reproductive age and the annual number of marriages, the number of births has fluctuated between 388,000 and 362,000 during this period.

Sex of live births. With rare exceptions, wherever birth statistics have been collected they have shown an excess of male over female births. No conclusive explanation of this excess has yet been given. Nevertheless, it is so much an accepted statistical fact that a proper ratio of male to female births has become one of the criteria of complete registration. The number of males to every 1,000 females born in Canada has averaged around 1,057 since the middle 1930s. Provincial sex ratios vary much more widely because of the relatively small number of births involved — the smaller the total number of births, the greater the chance of wide sex-ratio variations from year to year. In 1971, 1,063 male infants were born for every 1,000 females.

Hospitalized births. In 1971, 99.6% of all Canadian births occurred in hospital as compared with 96.9% ten years previously, and 79.1% twenty years ago. Before the initiation in 1958 of the federal-provincial hospital insurance programs — in which all provinces were participating by 1961 — there were rather wide variations among the provinces in percentages of hospitalized births. Such variations were caused by the existence of prepaid or provincially sponsored hospital, maternity or medical care plans in some provinces, the unavailability of hospital facilities in others — particularly in remote rural areas — and preference for home delivery in some local areas. Little variation now exists and Table 5.33 shows that only in the Yukon Territory and Northwest Territories do the percentages fall below 90.0%; in the Yukon Territory it was 86.0% in 1971, and in the Northwest Territories 88.6%.

Illegitimacy. In 1971 9.0% of the live births in Canada were “illegitimate” (i.e., births in which the parents reported themselves as not being married to each other at the time of the child's birth or registration, and in Ontario to those in which the mother was reported as “single”). This percentage is low compared with that of many countries of the world but has been rising recently, as shown in Table 5.34. In some provinces the percentages of illegitimate births have more than doubled during the past 20 years. It should be noted that the increase in the proportion of the illegitimate births is attributable to two factors: first, the relative increase in the proportion of women aged 15-24 (the female population of child-bearing age where the probability of having an illegitimate birth is the highest); and second, since legitimate fertility has declined sharply in recent years, the relative weight of the illegitimate fertility has increased.

Multiple births. Approximately 1% of confinements result in multiple births, and 99% of the multiple births are twins. One out of about 10,000 confinements results in triplets. Two sets of quadruplets were born in 1960 and one set in each of 1962, 1963, 1964 and 1968 and two sets in 1969.

Age of parents. Age of parents is an important variable in any analysis of birth statistics. The distribution of legitimate and illegitimate infants born in 1971 by age of the parents is given in Table 5.35. This Table shows that over two thirds of the births in 1971 to married mothers were among 20-29-year-olds, another 15% to 30-34-year-olds and about 8% under 20. Almost 46% of the illegitimate births were to unmarried mothers under 20 and an additional 34% among 20-24-year-olds.

It should be kept in mind that the higher proportion of births occurring at younger ages in recent years does not necessarily mean that couples are having their children at a younger age. Two things should be noted: first, the decline in fertility in recent years has been greatest among older women and, consequently, births occurring at younger ages automatically form a greater proportion of total births than formerly, as well as produce a lower average age at birth; secondly, this effect is compounded by the growing proportion of women in early child-bearing ages where fertility is higher or, more accurately, has declined less than among older women.

Order of birth. Table 5.36 shows the order of birth of all live-born infants in 1971 according to the age of the mother. As would be expected, 33,546, or four out of every five of the 40,480 infants born to mothers under 20 years of age, were the first live-born child, whereas about half of the children born to mothers of 20-24 years were their second or later live-born child. In 1971, 292 infants were born to mothers who had not yet reached their 15th birthday.

Table 5.37 summarizes the pattern of family formation since 1951 and shows that the percentages of first and second children have been increasing in recent years. As mentioned in the preceding Sections for illegitimate births and average age of parents, the decline in fertility and the recent evolution of the age structure of the female population affect the percentage distribution of births by parity. The increasing proportion of women in early child-bearing ages, where the majority of low-parity births occur, tends to increase the proportion of these births. Also, as explained for illegitimate births, the decline in the number of high-parity births also contributes to the increase in the percentage of low-parity births since the latter are taken as a percentage of total births.

Birthweight. Excluding Newfoundland, information on birthweight of newborn infants has recently become available from provincial records of birth. These data, in addition to their usefulness in calculating the average weights of newborn infants, are of importance from the public health and medical points of view in throwing light on the number of immaturely developed foetuses that are delivered alive. According to criteria recommended by the World Health Organization, infants of 5½ lb. or less at birth are considered "immature" and hence exposed to a much greater risk of dying than those over this weight.

Weights of infants at birth depend on a host of maternal factors — biological, physiological, environmental, nutritional, etc. — information on which is not available from the birth records. However, some information is available from Statistics Canada on the age of the mother and duration of pregnancy before delivery. Analysis of this information shows that there are variations in average weight according to the age of the mother; women under 20 and over 35 tend to produce higher proportions of immature infants, so that the late 20s and early 30s would appear to be the ideal ages for motherhood; and almost all infants of less than 28 weeks gestation are delivered "immature" according to the definition. The average single male infant born at full term weighs about 7 lb. 6 oz. at birth and the average female about 5 oz. less.

Stillbirths. The 3,396 stillbirths of at least 28 weeks gestation that were delivered in 1971 represented a ratio of a little over nine for every 1,000 foetuses born alive. As is evident from Table 5.38, the stillbirth ratio has been decreasing steadily, except for a slight increase in 1967, and has been cut by more than half over the past quarter-century. Although the variations between provincial ratios have never been wide, ratios in some provinces have been reduced more than in others. The stillbirth ratio among unmarried mothers has been consistently higher than that among married mothers but the difference is narrowing.

Table 5.39 illustrates the fact that the risk of having a stillborn child increases with the age of the mother. Although stillbirth ratios for mothers of all ages have been declining, they continue to be three to four times as high for mothers over 40 years of age as for mothers under 30.

The causes of death for the stillbirths delivered in 1971 are shown in Table 5.40. Of the 3,396 stillbirths, in 1,335 cases, or in about four out of every ten, the premature death of the foetus (before delivery) was medically certified as having been due to some abnormal condition of the placenta or the umbilical cord; in 1,482, or approximately 43%, death was due to injury during delivery or to some abnormal condition or infection in the foetus itself, and in the remainder (579) to some abnormal condition or infection in the mother.

5.6.2 Fertility rates

The sex and age composition of a population is obviously an important factor affecting crude birth rates. Since almost all children born each year are to women between the ages of 15 and 45, variations in the proportion of women of these ages to the total population will cause variations in the crude birth rate of different countries, or of different regions within a country, even though the actual rates of reproduction or fertility of the women in these age groups in each country or region are identical. It is therefore conventional practice to calculate what are termed age-specific fertility rates, i.e., the number of infants born annually to every 1,000 women in each of the reproductive age periods.

Table 5.41 indicates that in 1971, considering all women whether married or not, women in their 20s were the most reproductive, as might be expected; on the average, for every 1,000 women between the ages of 20 and 25, 135 infants were born during that year or, expressed another way, about one woman out of seven in that age group gave birth to a live-born infant. For the third consecutive year, women in the age group 25-29 had a higher rate (142) than those in their early 20s.

Another measure of fertility in a country is obtainable from what is conventionally referred to as a gross reproduction rate. The gross reproduction rates shown in Table 5.41 indicate the average number of female children born each year to each woman living through the child-bearing ages. In other words, the gross reproduction rate represents the average number of females that would be born to each woman who lived to age 50 if the fertility rate of the given year remained unchanged during the whole of her child-bearing period. A rate of 1.000 indicates that, on the basis of current fertility and without making any allowance for mortality among mothers during their child-bearing years, the present generation of child-bearing women would exactly maintain itself.

Canada has always had one of the highest gross reproduction rates among the industrialized countries of the world. Even during the period of low birth rates in the 1930s the rate varied between 1.300 and 1.500 and since World War II has ranged from 1.640 to a record high of 1.915 in 1959. However, since 1959, and particularly since 1964, the national gross reproduction rate has dropped rather dramatically from 1.788 to 1.061 in 1971 — slightly above the number required for the population to replace itself. Provincial and territorial rates have, on the whole but with some exceptions, followed the same pattern as the national average. Among the provinces, Quebec, British Columbia and Ontario, in that order, had the lowest gross reproduction rates in 1971, with Quebec below the replacement level.

5.6.3 Natural increase

The excess of births over deaths, commonly referred to as “natural increase”, is a very important factor in the growth of a population. Although the collection of Canadian birth and death statistics began only in 1921, some idea of the rate of natural increase in the early years back to the mid-1800s may be learned from the estimates of births and deaths shown at the beginning of Sections 5.6.1 and 5.7.1, which result in the following natural increase rates (per 1,000 population): 1851-61, 23; 1861-71, 19; 1871-81, 18; 1881-91, 16; 1891-1901, 14; 1901-11, 18; 1911-21, 16.

The estimates of natural increase in the late 1800s and early 1900s reflect a combination of high birth rates and declining death rates. During the 1920s and early 1930s the birth rate declined more than the death rate and the natural increase rate dropped to a record low of 9.7 in 1937. But higher birth rates during and after World War II and a continued declining death rate caused the natural increase rate to rise steadily from 10.9 in 1939 to a record 20.3 in 1954. After that year there was a steady drop because of declining birth rates and the natural increase rate fell for the first time below ten in 1971 at 9.5. Table 5.31 gives average rates of natural increase in the provinces for five-year periods 1951-65 and for single years 1966-71.

5.7 Mortality

The death rate in Canada is one of the lowest in the world (7.3 per 1,000 population in 1971). After a continuous gradual decline over the past hundred years or more, the rate appears now to have almost levelled off. It seems that Canada, like other industrialized nations, has virtually completed the demographic transition in the mortality component of population change. Any further reduction in the death rate is likely to be very small, and to affect primarily persons in the older ages. Canadian mortality experience in general, as well as in relation to infant and maternal deaths, is discussed in this Section, followed by measurements of life expectancy compiled from recent death rates.

5.7.1 General mortality

No official crude death rates (i.e., rates per 1,000 total population) are available prior to 1921. However, some indication of these may be obtained from studies of the early censuses which have resulted in the following estimates of annual crude death rates for specified intercensal periods: 1851-61, 22; 1861-71, 21; 1871-81, 19; 1881-91, 18; 1891-1901, 16; 1901-11, 13; 1911-21, 13.

As is typical of pioneer populations, Canada had high death rates in the mid-1800s when the country was still in the throes of settlement. The crude death rate during that period is estimated as between 22 and 25. Although no data are available, it is assumed that, while mortality at all ages was high, the rate among infants, children and young adults must have been particularly high since even in the 1920s mortality in these ages was still quite high. With the gradual increase in population density, urbanization and improved sanitation and medical services, the crude rate was halved during the 80 years between 1851 and 1930, dropping from about 22 to 11. It declined steadily to slightly over 8 in the late 1950s and dropped to record lows of 7.3 in 1970 and 1971.

Table 5.31 shows the trends in crude death rates since 1951 in the provinces and territories. The low rates shown for Newfoundland and Quebec are attributable mainly to the large proportion of young people in their populations and the relatively high rates for British Columbia to the high proportion of elderly people in that province.

Table 5.32 shows the numbers of deaths in urban centres of 50,000 population and over in 1971, and the average deaths per year for the periods 1966-70 and 1961-65.

Age and sex distribution of deaths. During the period of national vital statistics (1921 to date) the mortality pattern at all ages has been downward. Of major significance in lowering the over-all death rate were the reductions in infant mortality, in childhood death rates and in those of young adults.

Table 5.42 shows that, in the 20 years between 1951 and 1971, mortality rates among infants (under one year of age) and for children 1-4 years of age dropped by more than one half. Rates for older children and young adults also declined steeply. Despite the reduction in infant mortality, more deaths still occur in the first year of life than in any other single year of age. As shown in Table 5.43 males under age 40 accounted for 18.1% of all male deaths in 1961 but for only 13.6% of such deaths in 1971; in 1961, 16.4% of all female deaths were of persons under age 40, a percentage that declined to 10.7 in 1971. Percentage reductions in the mortality of older males since 1951 were more moderate, and over the 55-69 range they were quite small; the corresponding reductions for older females, however, were very substantial in every age group up to 85.

The sharp declines in mortality in the age groups under 40 has tended to increase the population in the older groups and to raise the average age at death. Over the 1961-71 period, the average age at death among males rose from 59.7 to 63.3 and the average age for females increased still more markedly, from 63.1 to 68.2. Over the same period, the male median age at death rose only 0.6 year, from 67.9 to 68.5 and the gain for females was 2.5 years, from 72.2 to 74.7. This means that half of the females who died during 1971 were more than 74.7 years old.

There are variations from province to province in average and median ages at death; these, in turn, are dependent in large measure on the age distribution of the population as well as on varying mortality rates at each age. For example, in Newfoundland a high mortality rate among infants and young children reduces the average and median age for that province, but the reverse is the case in British Columbia and several other provinces with older populations.

Causes of death. Table 5.44 summarizes the most recent figures for deaths and death rates in Canada, grouped according to the International Abbreviated List of 50 Causes of the International Classification of Diseases. Over 71,500, or 46% of the 157,272 deaths occurring in 1971 were due to diseases of the heart and circulatory system; 31,036 (almost 20%) to cancer; 12,031 (over 7%) to accidents; 8,986 to the major respiratory diseases (other than lung cancer); and 5,266 to diseases associated with early infancy. Combined, these accounted for almost 129,000 or almost 82% of all deaths during the year. Because of the rise in the average age at death during the past 30 years, the proportions of deaths from causes that affect older people have increased. Cancer and diseases of the cardiovascular-renal systems now account for a larger proportion of all deaths than formerly. By the same token, deaths from causes that affect mainly infants, children and young adults have declined.

Table 5.45 shows that accidents are, by far, the leading cause of death among males from age one to 44 and one of the five major causes above that age; although less predominant among females, accidents are also one of the leading causes of female death beyond the first year of life. Similarly, cancer is among the major causes of death among both males and females at all ages beyond infancy, while cardiovascular diseases are, on the whole, the major cause of death beyond age 45 among both males and females.

5.7.2 Infant mortality

Table 5.46 shows the striking improvement that has taken place in the mortality rates among infants (under one year of age) during the past 20 years. Both male and female rates have been more than halved during this period. For example, if the 1951 death rate had applied in 1971 there would have been 13,944 infant deaths instead of the 6,356 actually recorded, or an actual saving of 7,588 lives. This improvement is attributable to many factors — the higher proportion of births taking place in hospital or under proper prenatal and postnatal care, better supervision of water supplies, improved sanitation, pasteurization of milk, the use of antibiotics, improved home environment as a result of higher living standards and, in recent years, the generally lower age of mothers.

The variations that exist in infant mortality rates from province to province and from one locality to another may be explained by differences in the extent to which these factors apply provincially or locally. Among the provinces, the 1971 male infant mortality rates ranged from a record low of 17.1 to a high of 26.3, compared with the national average of 19.9, the latter including the high rate among the Northwest Territories aboriginal population. Female rates ranged from 13.3 (also a record low) to 19.4, compared with the national rate of 15.1. Although the national and provincial rates for both sexes had been declining steadily for some years, and despite, for some unknown reason, some reversals in provincial rates during 1968, the 1971 rates have declined to new record lows in most provinces.

Table 5.46 shows that mortality among male infants is roughly 20-25% higher than that among female infants for Canada, with wider variations for the individual provinces. For the country as a whole, out of every 1,000 infant boys born alive in 1969, 22 died before reaching their first birthday, whereas out of every 1,000 infant girls born alive, 17 died within one year. As already pointed out, there are on the average 1,055 males born to every 1,000 females but, because male infant mortality is higher, the excess of males is reduced greatly by the end of the first year. For example, in 1964-69 there were 1,213,833 male children born compared with 1,150,240 female children, an excess of 63,593 or 5.5%; in the same period, 30,240 male children died during their first year compared with 22,634 female children so that the excess of males at one year of age was reduced to 55,987 or 4.9%.

Causes of infant deaths. Infant mortality by cause of death is shown in Table 5.47. For example, of the 6,356 infants dying during 1971 before reaching their first birthday, 3,295 — or 52 out of every 100 — died of conditions usually associated with very early infancy or delivery. Of these, 1,356 died of anoxia or hypoxia (absence or deficiency of oxygen); 708 were due to immaturity of the foetus; 575 to some disease or condition in the mother, difficult labour or other complication of pregnancy or delivery; and 332 to some condition in the placenta or umbilical cord. Congenital malformations accounted for an additional 1,334 deaths. Of the 685 deaths from respiratory diseases, 514 were due to pneumonia. Of the 344 accidental deaths, 254 were due to suffocation by food or other objects. Of the 167 deaths from infective and parasitic diseases, 80 were due to dysentery, enteritis and diarrheal diseases.

Ages of infant deaths. As indicated in Table 5.48, of the 6,356 infants who died in 1971 within a year of their birth, 4,485, or 70% were less than four weeks old — conventionally referred to as the “neonatal period”. Of these neonatal deaths, 3,956 (or almost nine out of every ten) died within one week of their birth, of this number 2,644 died within 24 hours of delivery.

It has been stated that deaths occurring within the first four weeks following birth are conventionally referred to as “neonatal” deaths. As would be expected, deaths occurring in this hazardous neonatal period during 1971 were caused mainly by conditions associated with pregnancy, delivery or congenital malformations.

As in the case of total infant deaths, the neonatal death rate dropped from 22.6 in 1951 to 12.4 in 1971, with corresponding improvements in all provinces. Variations in provincial rates are narrowing, the 1971 rates ranging from 10.9 to 17.6. However, as the rate approaches a “hard-core” level, improvements during the past decade have not been as dramatic as they were during the previous two decades.

Perinatal mortality refers to the combined total of stillbirths and deaths of live-born infants occurring “around” the natal period and is a relatively new vital statistics concept. Since such deaths frequently have the same underlying causes associated with pregnancy or delivery (regardless of whether they occur before or after delivery) they are generally considered as including the combined total of stillbirths occurring after at least 28 weeks

pregnancy and deaths of live-born infants who fail to survive the first week of life.

Table 5.46 shows that in 1971 there were 7,352 such "deaths", of which 3,396 were stillborn and 3,956 live-born but failed to survive one week. The national rate of such deaths was 20.1 for every 1,000 total deliveries, a drop from 35.8 in 1951. This perinatal rate has declined slowly but steadily from 65.2 in 1921.

5.7.3 Life expectancy

Life tables are measures of life expectancy compiled from the death rates prevailing over a period. They assume that a given cohort of people (usually 100,000) are born simultaneously in a particular year and continue to be subject all their lives to the death rates prevailing in that year, or perhaps to the average death rates for, say, a three-year period centred around that year. The "expected" deaths in the cohort are calculated (in the case of a "complete" life table) for the first year of life, second year of life, etc., and the diminishing cohort is "followed" for 100 or more years until it has been virtually eliminated. Life expectancy at birth is calculated for the entire cohort and, subsequently, remaining life expectancy is calculated for the survivors at one year, two years, etc. It should be realized that the assumptions of such a life table are never fulfilled in practice and that the hypothetical cohorts in life tables do not represent any actual population. Usually, the persons in an actual cohort born in the life-table year will have a higher life expectancy than those in the life-table cohort because, during their lifetimes, public health conditions will presumably constantly improve and standards of medical care will also presumably advance.

Six official series of life tables for Canada and the provinces and regions have been published to date, based on deaths in the three-year period around each of the Censuses of 1931, 1941, 1951, 1956, 1961 and 1966. The life-table values for 1966 are given for selected years of age in Table 5.49. This Table shows that, at 1965-67 mortality rates, 2,525 of 100,000 males born would have died in their first year with 97,475 surviving to one year of age, that 156 more would have died in their second year with 97,319 reaching their second birthday, and so on. There would be 252 survivors at 100 years of age. The "Probability of dying" column shows the ratio between the population at each age and the number of "expected" deaths in the coming year. Finally, as already stated, the "Expectation of life" column shows the number of remaining years of life that can be expected at each age, given the 1965-67 mortality rates.

Table 5.49 also shows that the male probabilities of dying were higher than the corresponding female probabilities over the entire period from birth to 90 years. Mortality rates, and consequently the probabilities of dying, were lowest at about age ten for both sexes. Above this age the male probability rose quite rapidly, reflecting male accident mortality, and the female probability rose more gradually. Mortality for men between ages 20 and 35 was fairly constant but the male probability began to rise steeply at age 40, due mainly to cardiovascular mortality. Female probabilities after this age rose steadily but less rapidly. It may be observed that about 11,700 males would have died by age 50 as compared with 7,100 females, and that about 57,500 males would have survived to age 70 as compared with 74,400 females.

Table 5.50 shows life expectancy values over the 1951-66 period. By 1966, Canadian life expectancy at birth had reached a new high point of almost 68.8 years for males and 75.2 years for females — comparable to the expectancies for other countries with highly developed programs of medical and public health care. Because of the still substantial level of infant mortality, the expectations for male and female children one year old were somewhat higher than the corresponding expectancies at birth. Expectation at age 20 was 51.5 years for men and 57.4 years for women and, at age 40, 33.0 years for men and 38.2 for women. By age 65, the remaining expectancies were 13.6 years for men and 16.7 years for women.

Table 5.51 shows the life expectancies for five Canadian regions for selected years over the period 1951-61, and the corresponding expectancies for all ten provinces for 1966. The steady widening of the gap between male and female expectancies, so evident at the national level, was common to the expectancies for all five regions. Throughout the 1951-61 period, the Prairie Provinces showed the highest male expectancies and, in the later years, the highest female expectancies as well. The Quebec expectancies were consistently the lowest but they showed the largest gains over the period. Between 1931 and 1961, Quebec life expectancies at birth rose by 11.1 years for males and 15.0 years for females, as compared with the national advances of 8.4 years for males and 12.1 years for females.

In 1966, for the first time, expectancies were calculated for all ten provinces. Male expectancies at birth ranged from 70.5 for Saskatchewan to 67.9 for Quebec, a difference of 2.6 years; Saskatchewan also had the highest expectancies for females at 76.5 years and Quebec the lowest at 73.9 years. In general terms, it may be stated that 1966 expectancies for all four western provinces, at all the selected ages, were moderately above the national average, with the Saskatchewan rates being the highest in all cases. Ontario rates were fairly close to the Canadian average, except those for older men which were slightly below it. Quebec rates were still the lowest in the country, rather less than a year below the national average for males from birth to age 40 and somewhat more than a year below the national average for the corresponding range for females. For the Atlantic Provinces, expectancies at birth and at one year of age clustered fairly closely around the Canadian average, although the Newfoundland female expectancy at birth was a little lower. This statement also applies to expectancies at age 20, with Newfoundland males slightly above the national level. For older males, most Atlantic region expectancies were a little above average and for older females they fluctuated around the national figure.

5.8 Nuptiality

This Section includes not only recent statistics on marriages and marriage rates, but also on dissolutions of marriages. There is expanded coverage of the latter subject in this edition because of the dramatic increases in the number of divorces resulting from recent changes in Canada's divorce laws.

5.8.1 Marriages

In 1971 a record 191,324 marriages were solemnized in Canada, mainly because of the relative increase in the numbers of men and women in the prime marrying ages — the late teens and the early 20s. This growing proportion of young men and women has advanced the crude marriage rate from a low of 6.9 per 1,000 population in 1963 to 8.9 in 1971. Table 5.52 gives the number of marriages and the marriage rates for Canada and the provinces for the four census years 1951, 1961, 1966 and 1971, with percentages of brides and bridegrooms according to place of birth.

For the country as a whole, 81% of the bridegrooms of 1971 were born in Canada, 67% in the province in which they were married; 86% of the brides were born in Canada, 73% in the province in which they were married. There are wide variations in the pattern of intermarriage of foreign-born and native-born persons among the provinces; in the older Atlantic Provinces and in Quebec and Saskatchewan, there is a greater tendency than in the other provinces to marry native Canadians and in these areas both partners are often born in the same province. In Ontario, Alberta and British Columbia there are higher proportions than elsewhere of intermarriage with persons born in other provinces or outside Canada.

Age and marital status. Table 5.53 shows that 169,072 or over 88% of the 191,324 brides who married in 1971, and 88% of the grooms, had never previously married. The proportion of divorced brides remarrying in 1969 rose sharply for the first time to 6.4% from 4.4% in the previous year and the proportion of divorced grooms from 4.7% to 6.9%. By 1971 these proportions had risen to 7.5 and 8.1, respectively, resulting from the increased number of divorces granted under the new federal divorce legislation enacted in 1968.

In 1971, the median age at marriage — the age above and below which half of the marriages occurred — was 23.5 for bachelors and 21.3 for spinsters. After having remained constant since 1960 at 21.1 and 21.2, the 1971 median ages represent a slight trend toward later marriage, particularly for bachelors.

Religious denomination. The distribution of brides and bridegrooms by religious denomination is roughly the same as that for the population as a whole. Table 5.54 shows the relatively strong influence that religion has on marriage. About 63% of all marriages are between persons of the same religious denomination; in 1971 among those of Jewish faith it was about 90%; among Roman Catholics about 80%; Eastern Orthodox about 64%; and United Church about 50%. Except for those of the Jewish faith, the proportions of persons of the same faith marrying appears to be declining slightly in recent years.

5.8.2 Divorces

Since 1921, the number of divorces granted each year in Canada has been rising steadily. From only about 500 during the 1921-25 period, the annual number of divorces rose to more

than 1,000 in 1931-35, to about 2,500 in 1941, and to 5,270 in 1951. From 1952 to 1962 the annual increase was slight, as the number of divorces in the latter year did not exceed 6,800. However, after 1963 the increase was particularly large, and in the five years to 1968 the number of divorces rose from 7,686 to 11,343.

Relating the number of divorces in one year to the total number of married women in the population produces a slightly different picture. The number of divorces per 100,000 married women rose from 33 in 1921 to 52 in 1931 to 105 in 1941 and to 173 in 1951, stabilizing at that point and even decreasing slightly to 166 in 1962. Since then, the increase has been sharp and the number of divorces per 100,000 married women reached 185 in 1963 and 248 in 1968.

A more refined analysis can be produced by relating the divorces of a given year to the cohorts of marriage from which they originated. This permits the calculation, for a given year, of the proportion of marriages which would eventually end in divorce if the conditions existing during that year were to remain constant indefinitely. Such an analysis gives a trend of the probability of divorce almost identical to that obtained by relating the annual number of divorces to the number of married women. About one marriage in 100 would have been dissolved by divorce if the conditions of 1921 had remained constant. This probability rose to between 1 and 2 in 1931, to between 3 and 4 in 1941 and to 5 in 1951, staying at that level until 1962. The advance since that time has been sharp and figures for 1968 indicate a divorce probability of about 8 per 100 marriages or about one marriage in 12 that will eventually end in divorce. This last increase is probably related to the high proportion of early marriages during the postwar period. In other words, the probability of divorce would in all likelihood have been lower in 1968 had the average age at the time of marriage not gone down during that period.

Legislation in effect since 1968 has led to a considerable increase in the number of divorces. From the figure of 11,343 in 1968, the number of divorces rose to 26,093 in 1969, 29,775 in 1970 and 29,626 in 1971 (Table 5.55). The very small proportion of rejected petitions confirms the irreversibility of marriage breakdown, and the role of the courts in this instance seems limited to legalizing an already existing state. On the basis of the number of divorce decrees handed down, the probability rate of divorce in 1969 would be 20%, and that of 1971, 23%, or nearly one marriage in four that would eventually be dissolved by divorce. These figures very likely over-estimate the long-term trend since a disproportionate number of divorces were granted to couples married for more than 20 or even 30 years and who were probably unable to obtain a divorce under previously existing legislation. However, it is impossible to estimate the proportion by which these divorces exceed the norm and it may be necessary to wait several years before making a judgement on the long-term probability of divorce. Such a rate would in all likelihood be higher than the 1968 rate, but comparisons are not valid over time since the frequency of divorce depends on both the degree of stability of a marriage and the nature of the legislation in effect.

Although it is still too early to talk about stabilization because the legacy of pre-1968 conditions still influences the annual number of divorces, an analysis of the characteristics of divorced couples offers some opportunity to gain information on certain aspects of divorce that are still unknown and which are, moreover, less affected by legislation. Such an analysis would be mainly demographic. In addition, it would concern itself only with divorces granted under the new legislation, that is 21,964 in 1969, 29,168 in 1970 and 29,605 in 1971.

Grounds for divorce. Prior to 1968, adultery was, with very rare exceptions, the only grounds for divorce. The new legislation provided 16 justifiable grounds for divorce: adultery, sodomy, bestiality, rape, homosexual act, subsequent marriage, physical cruelty, mental cruelty, imprisonment for aggregate period of not less than three years, imprisonment for not less than two years on sentence of death or sentence of ten years or more, addiction to alcohol, addiction to narcotics, whereabouts of spouse unknown, non-consummation, separation for not less than three years and desertion by petitioner for not less than five years. One or more grounds may be cited in any petition, but in such cases it may be sufficient to establish proof of only one of those named to obtain a divorce. In almost three quarters of the petitions filed only one is mentioned. Most frequent, in descending order, are: separation, adultery and desertion. The reasons given most frequently when multiple grounds appear in the divorce petition are physical and mental cruelty, adultery and cruelty, and adultery and separation. Table 5.56 shows that for divorces as a whole, the proportion of cases involving adultery has risen from

29% in 1969 to 34% in 1970 and 38% in 1971. Separation was cited in 57% of cases in 1969, 51% in 1970 and in about 47% in 1971. Desertion is given as the reason for divorce in a steadily decreasing proportion of cases. On the other hand, there has been a sharp increase in the number of divorces because of cruelty.

The relative frequency of grounds for divorce varies with the petitioner. Adultery or separation are listed more frequently when the husband is the petitioner. On the other hand, women more frequently petition for divorce on grounds of cruelty or alcoholism.

Ages of divorced persons. The most striking finding, as shown in Table 5.57, relates to the sharp drop in the average age of persons being divorced. Men over 40 accounted for more than 50% of divorces in 1969, but this proportion dropped to 43% in 1971. The trend is the same for women, where the proportions were 43% and 34%, respectively. The average age of men being divorced (which was 42 in 1969), was only 40 in 1970 and just over 39 in 1971. For women, the average age went from 39 in 1969 to just over 36 in 1971.

Legislative changes are at the root of this decrease in age. Marriages dissolved first were usually those which took place 20 or 30 years earlier and which could not be dissolved under previous legislation. This distorting effect will gradually level off but it is by no means certain that it has yet completely disappeared. Consequently, increasingly earlier age at divorce cannot be validly assumed.

Although there has been rapid change in the average age at the time of divorce, the gap in the average age between divorced persons has remained remarkably constant. It is generally the same as the average age-gap at the time of marriage. This does not necessarily mean that the average age-gap at the time of marriage has no influence on divorce. When people marry young, the average age-gap is slight but it is precisely this group of marriages that is most divorce-prone, and there is some reason to expect that there would be a lesser average age-gap at divorce. This is offset by a higher frequency of divorce in cases where there is a wide average age-gap between partners in the marriage.

The average age-gap between petitioners is very wide. The average age of husbands requesting a divorce is considerably higher than that of all husbands. The grounds given for divorce offer a possible explanation. Husbands petition for divorce more frequently on grounds of separation or desertion where there is a waiting period of three or five years before an action can be filed.

Number of children. Referred to here are children living with the parents at the time of the divorce and not all children born of the marriage. Included are all children of 16 years and younger as well as still-dependent children over 16. The total number of children involved was 20,099 in 1969, 32,417 in 1970 and 34,526 in 1971, or 0.92 children per divorce in 1969, 1.11 in 1970 and 1.17 in 1971 (Table 5.56). The change in number of children per divorce is closely related to the average age of parents at the time of divorce. The higher the average age of parents, as was the case in 1969 for example, the lower the probability of there being children at home. However, given the same age at divorce, the average number of children born of divorced parents is lower than the average for all families.

Nearly 55% of divorced persons in 1969 had no children at the time of the divorce. In 1970, this proportion was 47% and in 1971, 45%. The high proportion of divorces not involving children in 1969 relates to their higher average age. Divorced couples without children include not only those married for 20 or 25 years where the children have reached the age of majority and are no longer living with their parents, but also recently married couples where the proportion without children is very high. Almost half of all couples divorced after five years of marriage were still childless as against less than 20% for the total population married for the same length of time. Among couples divorced after ten years of marriage, the proportion without children was 25% as against almost 10% for the population as a whole. Among divorced couples with children, more than 70% had one or two children only; couples having three children made up most of the remainder.

Custody of children. Wives petition for divorce more often than do their husbands; they do so more often when they have children, and more frequently still as the number of children involved increases. The wife files for divorce in a little over 63% of all cases, and this proportion has remained the same over the three-year period studied. However, in cases where children are involved, women request the divorce in nearly 70% of the cases and this

proportion increases with the number of children, reaching 75% in families of seven children or more.

The mother is granted custody of all the children in almost 75% of all cases and fathers in about 13%. In virtually all the remaining cases, custody is either divided or not awarded.

These proportions vary with the petitioner. As shown in Table 5.56, when the mother is the petitioner she is granted custody in almost 90% of the cases while the father gains custody in only 2% to 3%. In the remaining cases, custody is divided or not awarded.

On the other hand, the proportion of cases in which the father gains custody when he is the petitioner has dropped from 43% in 1968 to 38% in 1971. The proportions are 34% and 38%, respectively, for custody awarded to the mother. The custody of the children is divided in 5% of the cases, and in approximately 20% of the cases no award as to custody is made.

The high proportion of cases where no custody award is made when the father petitions for the divorce is probably related to the higher average age of fathers at the time of divorce. The higher the average age at the time of divorce, the lower the probability of there being minor children for whom an award is required. However, there may be cases in which there are minor children but the question is not raised before the court because of a tacit agreement between the parents regarding custody of the children.

Marital status and age at marriage. Just over 92% of persons divorced in 1971 had not been married before as against 2% of widowed persons and 6% of persons previously divorced. This low percentage of persons previously divorced, as shown by the figures in Table 5.57, is explained by the relatively low proportion of remarried persons in the total population. These proportions should change in the future since there should be a decrease in the proportion of newly divorced persons and a corresponding increase in formerly divorced persons, because of the expected increase in the remarried proportion of the total population in the future.

Previous marital status, and even more important, age at the time of marriage, have always been cited as determining factors in the frequency of divorce. The new statistics confirm for Canada what has already been proved in other countries. Early marriage and remarriage considerably increase the risks of divorce. For each marriage duration, the probability of divorce increases in direct proportion to the precocity of marriage or with remarriage.

Table 5.58 gives the probability of marriages terminating in divorce for every 100 marriages, by age and marital status of the woman at the time of marriage and by the duration of marriage. This rate is what would be observed if a cohort of women were constantly exposed to the conditions existing in 1971.

These rates are probably too high to adequately reflect the underlying trend. As already mentioned, the 1971 divorce rates are still affected by conditions existing prior to enactment of the new legislation in 1968. However, it is unlikely that the rates by age at marriage or by marital status would be affected differently by this implicit distortion. In other words, while it may not be true that 30% of women who marry below the age of 20 and who were single at the time of marriage will be divorced after 30 years of marriage, nor that 15% of women marrying between 20 and 24 years of age will be divorced after 30 years of marriage, it is at least valid to state that women marrying below 20 years of age are divorced twice as often as those marrying between 20 and 24 years of age and three times as often as women who marry between 25 and 29 years of age.

Divorce is more frequent among women who were widows at the time of marriage and still more frequent among those previously divorced. Given the same age at marriage, widows are divorced twice as often as single women and divorcees three times as often.

5.9 Migration

Sections 5.5 to 5.8 of this Chapter were concerned with the vital components of population change (fertility, mortality, nuptiality). There remain the flows of population across national borders (immigration and emigration) which also affect the country's growth and demographic structure. The relative influence of net migration (the excess of immigrants over emigrants) compared to natural increase factors (the excess of births over deaths) in past growth rates of Canada over the period 1851-1971 are shown in Table 5.2. This Section provides recent data on the numbers and characteristics of immigrants entering Canada (Tables 5.59 to 5.66), as well as estimates of the numbers of emigrants leaving (Table 5.67). The

subject of internal migration receives only brief mention in this edition of the *Canada Year Book*, but some estimates of total net migration by provinces in the 1961-71 period can be observed in Table 5.5. Demographic studies resulting from the 1971 Census will provide the most recent trends on internal migration flows within Canada, as did the monographs on this subject from the 1961 Census relating to the preceding decade.

5.9.1 Immigration

The extent of immigration to Canada in any period is affected both by domestic conditions and by conditions abroad. A discussion of these factors, together with an analysis of recent trends, may be found in the 1972 *Canada Year Book* pp. 222-225. The numbers of postwar immigrant arrivals for each year over the period 1946-71 are shown in Table 5.59 of the present edition.

Origin of immigrants. In 1971, Canada received 121,900 immigrants from various countries of origin. This was a decrease of 25,813 or 17.5% from 1970. The reduction was a reflection, in part, of changing economic conditions in Canada and the increasing output of Canadian institutions of higher education which reduced the demand for skilled immigrants. Continuing favourable economic conditions in most western European countries were also a factor in reducing emigration from that area. Tables 5.60 and 5.61, showing the country of former residence and the country of citizenship of immigrants, respectively, indicate that by world area the continent of Europe and Australasia contributed a lower proportion of the total immigration stream in 1971 than in the previous year. On the other hand, there was an increased percentage of immigrants from the Americas, Asia and Africa.

Destination of immigrants. Upon arrival in Canada, immigrants are asked to state their intended destinations. According to these records, Ontario absorbed by far the highest proportion of arrivals in the three-year period 1969-71 – 53.3% of all the males and 54.2% of all the females. Quebec was the second most-favoured province of destination, receiving 16.6% of the males and 16.2% of the females, followed by British Columbia with 14.7% of the males and 14.4% of the females. The proportions intending to settle in the Prairie Provinces were 12.4% for both males and females, and in the Atlantic Provinces, 2.8%. The provincial distribution, as shown in Table 5.62 for 1970 and 1971, has changed little from year to year over the past two decades.

Sex, age and marital status. The sex distribution of immigrants in 1970 and 1971 is shown in Table 5.63. In the five years 1967-71, adult males constituted 37.6% of the immigrants, adult females 37.2%, and children under 18 years of age the remaining 25.2%. Without relation to age, 49.5% of the newcomers were females.

The number of female immigrants coming into Canada was higher than the number of male immigrants in every year from 1957 to 1964; since then, with the exception of 1969 and 1971, the trend has been in favour of males. In 1971, there was an excess of about 1,000 females over males (Table 5.64). Single males surpassed single females by over 5,000 but in all marital categories women outnumbered men: married females exceeded married males by 3,113; there were 3,281 widows compared to 545 widowers; divorcees outnumbered divorced men by 283; and separated females were 376 to 248 for males. Of the total immigration for 1971 of persons 15 years of age and over, 41.0% were single, 52.8% married, and 6.2% were widowed, divorced or separated.

Intended occupations. Some 61,282 persons were added to the labour force in 1971 compared with 77,723 in 1970. The remainder – those not destined for the labour force – were largely dependants of immigrants or close relatives sponsored by individuals in Canada. Skilled immigrants continued to fill acute shortages of qualified people in certain areas, thus providing essential services to the Canadian public. Table 5.65 shows that in 1971 alone, Canada admitted 987 physicians and surgeons, 55 dentists, 749 medical and dental technicians and 1,538 other professionals in the health services field. The mining industry attracted 103 mining engineers. The value of the education, training and experience of these professionals, as well as that of other newcomers, is immeasurable.

Deportations of immigrants. Deportations by cause and nationality are shown in Table 5.66 for the years 1970 and 1971. Persons who have not acquired domicile (five years of residence in Canada as landed immigrants) may be deported if they fall into prohibited classes at time of admission or within five years of admission, have engaged in commercialized vice, have been

convicted under the Criminal Code or have become inmates of prisons, or have gained admission to Canada by fraudulent means. The causes that may lead to deportation are narrowed after a person has acquired domicile. A person not yet a citizen may be deported regardless of length of residence if he is found to be a member of a subversive organization or engages in subversive activities, or if he has been convicted of an offence involving disloyalty to the Crown, or if he has, outside of Canada, engaged in activities detrimental to the security of Canada. A Canadian citizen cannot be deported.

5.9.2 Emigration

Emigration from Canada is a factor tending to offset to some extent present and past immigration activities. The major outward movement has always, of course, been to the United States and that movement, both of native-born Canadians and of Europeans who originally migrated to Canada, has attained considerable proportions at certain periods. No Canadian statistics on emigration are available but Table 5.67 gives figures taken from the annual reports of the Immigration and Naturalization Service of the United States Department of Justice. These figures show the numbers of persons entering the United States from Canada during the years ended June 30, 1962-71 with the expressed intention of establishing permanent residence in that country. They do not include persons travelling for pleasure, even for extended periods of time, holders of border-crossing cards (normally issued to persons living in border areas of Canada but working in the United States) or casual tourist crossings in these same areas.

Of the 13,128 Canadian-born persons entering the United States in the year ended June 30, 1971 with the intention of remaining permanently, 5,781 were males and 7,347 females. Nearly one fifth, or 2,592, of the total native-born emigrants were males in the productive age group, 20-59 years. By occupation, the largest group of the total of 13,128 native-born persons was the professional or technical group which numbered 1,703; clerical and kindred workers numbered 573; and craftsmen or foremen numbered 428. On the other hand 8,993 persons, or 68.5% of the total, were classed as housewives, children and others with no reported occupation. Altogether, 45.4% of the total were persons under 20 years of age.

Of the 22,709 persons entering the United States from Canada claiming Canada as country of last permanent residence – which of course includes native-born persons and those born in other countries who have resided in Canada – the Immigration and Naturalization Service of the United States Department of Justice lists 4,530 as professional, technical and kindred workers; 1,413 as craftsmen, foremen and kindred workers; and 1,049 as clerical and kindred workers. Housewives, children and others not in the labour force amounted to 12,314 or 54.2% of the total.

5.9.3 Internal migration

As people move from one place of residence to another within the nation's borders, freely and without restriction, they set up varying patterns of migration which differ in intensity and directional flow. These internal movements have marked effects on regional economies, and they exert an influence on future population growth. Thus it is important that attempts be made to measure these various migration flows, such as from rural countryside to urban centres, from cities to suburbs, from one province or economic region to another, and so on.

Various statistical methods are used in this measurement process but perhaps the most useful estimates are those resulting from the inclusion in national censuses of questions which seek to determine the exact place of residence of each person at the date of the preceding census five years earlier. From a comparison with the location of their present residence, it is possible to estimate the size, directional flows and characteristics of the migrating population over the period. Such questions were included in both the 1961 and 1971 Censuses of Canada. Data from the 1971 Census were not available in time for this edition, but migration trends in recent years from the 1961 Census have been issued in special monographs and other studies (notably census monographs, Catalogue Nos. 99-548 and 99-557; and other reports, e.g., Catalogue No. 99-513).

Census figures on birthplace (province of birth) provide additional data on internal migration flows, by comparing the numbers of persons born in a given province by their province of present residence. However, such figures give no indication of the periodicity of the migrating process. A different technique is illustrated in Table 5.5 which shows the total net migration for each province over the 1961-71 period. These figures include the effects of

immigration from abroad as well as internal movements but they are useful in showing the net results from all types of migration over an intercensal period. They also represent a technique that can be applied to individual counties, cities or other entities for which population counts and natural increase figures are available.

Finally, administrative records, such as those reporting changes of address by families receiving family allowances, help to shed light on the migrating patterns of Canadian families. For example, the family allowances data assist in arriving at the internal migration component for the annual estimates of population for provinces, counties and metropolitan areas issued by Statistics Canada (see also Section 5.2.1).

Sources

- 5.1 Research Subdivision, Census Branch, Statistics Canada. The early growth of Canada's population is analyzed in Vol. I of the 1931 Census; other accounts of the growth prior to the present century are contained in: Vol. I, 1941; Vol. X, 1951; Bulletin 7.1-1, 1961; and Bulletin 5.1-1, 1971. More detailed accounts of recent population growth are available in the 1969 *Canada Year Book*, pp. 153-165 and the 1970-71 edition, pp. 210-220.
- 5.2 Population and Housing Subdivision, Census Branch, Statistics Canada.
- 5.3 Population and Housing Subdivision, Census Branch, Statistics Canada; except 5.3.4 provided by the Policy, Planning and Communications Branch, Department of Indian Affairs and Northern Development.
- 5.4 Population and Housing Subdivision, Census Branch, Statistics Canada.
- 5.5 - 5.8 Health and Welfare Division, Institutional and Public Finance Branch, Statistics Canada.
- 5.9 Canadian Immigration Division, Department of Manpower and Immigration; except 5.9.2 and 5.9.3 provided by Research Subdivision, Census Branch, Statistics Canada.

Tables

.. not available
... not appropriate or not applicable
— nil or zero
— too small to be expressed

e estimate
p preliminary
r revised
certain tables may not add due to rounding

All figures of the 1971 Census in Tables 5.11 to 5.13, 5.15 to 5.16, and 5.23 to 5.30, have been subjected to a confidentiality procedure to prevent the possibility of associating small figures with any identifiable individual. The particular technique used is known as "random rounding". Under this method, all last or "unit" digits in a table (including all totals) are randomly rounded (either up or down) to "0" or "5". This technique provides the strongest possible protection against direct, residual, or negative disclosures without adding any significant error to the census data. However, since totals are independently rounded they do not necessarily equal the sum of individual rounded figures in distributions. Also, minor differences can be expected for corresponding totals and cell values in various census tabulations.

5.1 Growth of the population of Canada, Census years 1851-1971

Census year	Population No.	Increase during intercensal period		Average annual rate of population growth %
		No.	%	
1851	2,436,297			
1861	3,229,633	793,336	32.6	2.9
1871	3,689,257	459,624	14.2	1.3
1881	4,324,810	635,553	17.2	1.6
1891	4,833,239	508,429	11.8	1.1
1901	5,371,315	538,076	11.1	1.1
1911	7,206,643	1,835,328	34.2	3.0
1921	8,787,949	1,581,306	21.9	2.0
1931	10,376,786	1,588,837	18.1	1.7
1941	11,506,655	1,129,869	10.9	1.0
1951 ¹	14,009,429	2,502,774	21.8	1.7
1961	18,238,247	4,228,818	30.2	2.7
1971	21,568,311	3,330,064	18.3	1.7

¹ 1951 Census figures include Newfoundland for the first time. Excluding Newfoundland the increase would have been 2,141,358 or 18.6%.

5.2 Growth components of Canada's population, 1851-1971

Period	Total population growth '000	Births '000	Deaths '000	Natural increase '000	Ratio of natural increase to total growth %	Immig- ration '000	Emig- ration '000	Net mig- ration '000	Ratio of net mig- ration to total growth %
1851-1861	793	1,281	670	611	77.0	352	170	182	23.0
1861-1871	460	1,370	760	610	132.6	260	410	-150	-32.6
1871-1881	636	1,480	790	690	108.5	350	404	-54	-8.5
1881-1891	508	1,524	870	654	128.7	680	826	-146	-28.7
1891-1901	538	1,548	880	668	124.2	250	380	-130	-24.2
1901-1911	1,835	1,925	900	1,025	55.9	1,550	740	810	44.1
1911-1921	1,581	2,340	1,070	1,270	80.3	1,400	1,089	311	19.7
1921-1931	1,589	2,420	1,060	1,360	85.5	1,200	970	230	14.5
1931-1941	1,130	2,294	1,072	1,222	108.1	149	241	-92	-8.1
1941-1951 ¹	2,503	3,212	1,220	1,992	92.3	548	382	166	7.7
1951-1961	4,228	4,468	1,320	3,148	74.5	1,543	463	1,080	25.5
1961-1971	3,330	4,105	1,497	2,608	78.3	1,415	693	722	21.7

¹ Includes Newfoundland in 1951 but not in 1941.

5.3 Projections of population and the components of population change, Census years 1971-2001

Year	Population as at June 1 '000	Distribution by age			Annual death rate per 1,000	Annual birth rate per 1,000	Annual natural increase per 1,000	Annual rate of population growth %
		0-19 %	20-64 %	65 + %				
Series A ¹								
1971	21,568.9	39.4	52.5	8.1	7.3	16.8	9.5	0.9
1976	22,521.2	36.1	55.3	8.6	7.9	16.5	8.6	0.9
1981	23,511.7	32.8	58.0	9.2	8.2	16.9	8.7	0.9
1986	24,516.1	30.3	59.9	9.8	8.6	16.4	7.8	0.8
1991	25,382.9	29.7	59.7	10.6	9.0	14.9	5.9	0.6
1996	26,014.5	29.0	59.9	11.1	9.5	13.5	4.0	0.4
2001	26,469.2	27.8	60.8	11.4	10.1	13.1	3.0	0.3
Series B ²								
1971	21,568.9	39.4	52.5	8.1	7.3	16.8	9.5	1.3
1976	23,017.9	36.3	55.1	8.6	7.2	18.3	11.1	1.4
1981	24,701.1	33.5	57.2	9.3	6.9	18.9	12.0	1.4
1986	26,503.9	31.6	58.4	10.0	6.6	18.0	11.4	1.4
1991	28,241.3	31.3	57.7	11.0	6.4	16.1	9.7	1.2
1996	29,844.6	30.5	57.7	11.8	6.3	14.8	8.5	1.1
2001	31,431.3	29.1	58.4	12.5	6.3	14.6	8.3	1.0

¹ Series A assumptions:

1. Mortality: expectation of life at birth will remain unchanged at 69.86 years for males and 75.75 years for females.
2. Fertility: will change from 2.19 children in 1971 to 1.90 in 1985 and then remain constant.
3. Migration: zero net migration.

² Series B assumptions:

1. Mortality: expectation of life at birth will increase gradually to 76.7 years for males and 84.5 years for females by 2001.
2. Fertility: will change from 2.19 in 1971 to 2.13 in 1985 and then remain constant.
3. Migration: net migration of 60,000 per year.

5.4 Population and percentage change of population, by province, Census years 1951-71

Province or territory	Population and percentage change				
	Population				
	1951	1956	1961	1966	1971
Newfoundland	361,416	415,074	457,853	493,396	522,104
Prince Edward Island	98,429	99,285	104,629	108,535	111,641
Nova Scotia	642,584	694,717	737,007	756,039	788,960
New Brunswick	515,697	554,616	597,936	616,788	634,557
Quebec	4,055,681	4,628,378	5,259,211	5,780,845	6,027,764
Ontario	4,597,542	5,404,933	6,236,092	6,960,870	7,703,106
Manitoba	776,541	850,040	921,686	963,066	988,247
Saskatchewan	831,728	880,665	925,181	955,344	926,242
Alberta	939,501	1,123,116	1,331,944	1,463,203	1,627,874
British Columbia	1,165,210	1,398,464	1,629,082	1,873,674	2,184,621
Yukon Territory	9,096	12,190	14,628	14,382	18,388
Northwest Territories	16,004	19,313	22,998	28,738	34,807
Canada	14,009,429	16,080,791	18,238,247	20,014,880	21,568,311
	Percentage change				Average annual change
	1951-56	1956-61	1961-66	1966-71	1951-71
					%
Newfoundland	14.8	10.3	7.8	5.8	1.9
Prince Edward Island	0.9	5.4	3.7	2.9	0.6
Nova Scotia	8.1	6.1	2.6	4.4	1.0
New Brunswick	7.5	7.8	3.2	2.9	1.0
Quebec	14.1	13.6	9.9	4.3	2.0
Ontario	17.6	15.4	11.6	10.7	2.6
Manitoba	9.5	8.4	4.5	2.6	1.2
Saskatchewan	5.9	5.1	3.3	-3.0	0.5
Alberta	19.5	18.6	9.9	11.2	2.8
British Columbia	20.0	16.5	15.0	16.6	3.2
Yukon Territory	34.0	20.0	-1.7	27.8	3.6
Northwest Territories	20.7	19.1	25.0	21.1	4.0
Canada	14.8	13.4	9.7	7.8	2.2

5.5 Components of population change, by province, 1961-66 and 1966-71

Province or territory	Total population change		Natural increase		Net migration	
	1961-66	1966-71	1961-66	1966-71	1961-66	1966-71
Newfoundland	35,543	28,708	59,577	49,096	-24,034	-20,388
Prince Edward Island	3,906	3,106	8,506	5,207	-4,600	-2,101
Nova Scotia	19,032	32,921	59,526	37,418	-40,494	-4,497
New Brunswick	18,852	17,769	53,229	35,233	-34,377	-17,464
Quebec	521,634	246,919	457,717	288,727	63,917	-41,808
Ontario	724,778	742,236	487,852	373,072	236,926	369,164
Manitoba	41,380	25,181	70,340	49,260	-28,960	-24,079
Saskatchewan	30,163	-29,102	75,691	50,867	-45,528	-79,969
Alberta	131,259	164,671	134,607	105,293	-3,348	59,378
British Columbia	244,592	310,947	104,103	88,494	140,489	222,453
Yukon Territory and Northwest Territories	5,494	10,075	6,745	6,720	-1,251	3,355
Canada	1,776,633	1,553,431	1,517,893	1,089,387	258,740	464,044

5.6 Annual estimates of population, by province, as at June 1, 1966-72 (thousands)

Province or territory	1966 Census	Revised estimates, 1967-70				1971 Census	1972 estimates
		1967	1968	1969	1970		
Newfoundland	493	499	506	514	517	522	532
Prince Edward Island	109	109	110	111	110	112	113
Nova Scotia	756	760	767	775	782	789	794
New Brunswick	617	620	625	628	627	635	642
Quebec	5,781	5,864	5,928	5,985	6,013	6,028	6,059
Ontario	6,961	7,127	7,262	7,385	7,551	7,703	7,825
Manitoba	963	963	971	979	983	988	992
Saskatchewan	955	957	960	958	941	926	916
Alberta	1,463	1,490	1,524	1,559	1,595	1,628	1,655
British Columbia	1,874	1,945	2,003	2,060	2,128	2,185	2,247
Yukon Territory	14	15	15	16	17	18	19
Northwest Territories	29	29	30	31	33	35	36
Canada	20,015	20,378	20,701	21,001	21,297	21,568	21,830

5.7 Populations of incorporated cities, towns and villages classified by size group, 1961, 1966 and 1971

Size group	1961			1966			1971		
	Incorporated centres	Population	% of total population	Incorporated centres	Population	% of total population	Incorporated centres	Population	% of total population
Over 500,000	2	1,863,469	10.2	2	1,886,839	9.4	2	1,927,138	8.9
Between									
400,000 and 500,000	—	—	—	1	410,375	2.1	3	1,267,727	5.9
300,000 and 400,000	1	384,522	2.1	2	707,500	3.5	2	611,514	2.8
200,000 and 300,000	5	1,338,294	7.3	3	845,867	4.2	4	900,778	4.2
100,000 and 200,000	4	568,056	3.1	6	997,051	5.0	8	1,060,048	4.9
50,000 and 100,000	17	1,134,214	6.2	26	1,740,446	8.7	26	1,870,435	8.7
25,000 and 50,000	41	1,431,909	7.9	43	1,438,388	7.2	49	1,633,969	7.6
15,000 and 25,000	43	862,101	4.7	52	1,019,205	5.1	59	1,150,768	5.3
10,000 and 15,000	61	743,474	4.1	65	781,611	3.9	55	675,748	3.1
5,000 and 10,000	132	932,936	5.1	125	898,136	4.5	144	1,028,412	4.8
3,000 and 5,000	151	579,201	3.2	165	637,117	3.2	173	670,537	3.1
1,000 and 3,000	465	793,465	4.4	471	818,003	4.1	502	866,086	4.0
Under 1,000	1,039	437,207	2.4	1,057	445,246	2.2	1,093	451,810	2.1
Total	1,961	11,068,848	60.7	2,018	12,625,784	63.1	2,120	14,114,970	65.4

5.8 Population of incorporated cities and towns of 50,000 and over, 1961, 1966 and 1971

Incorporated city or town	Year of incorporation	1961	1966	1971
Brantford, Ont.	1877	55,201	59,854*	64,421
Burlington, Ont.	1915	47,008	65,941*	87,023
Calgary, Alta.	1893	249,641	330,575*	403,319*
Dartmouth, NS	1961	46,966	58,745	64,770
Edmonton, Alta.	1904	281,027	376,925*	438,152*
Guelph, Ont.	1879	39,838	51,377*	60,087*
Halifax, NS	1841	92,511	86,792	122,035*
Hamilton, Ont.	1846	273,991	298,121*	309,173
Hull, Que.	1875	56,929	60,176*	63,580*
Kingston, Ont.	1846	53,526	59,004	59,047*
Kitchener, Ont.	1912	74,485	93,255*	111,804*
LaSalle, Que.	1958	30,904	48,322	72,912
Laval, Que.	1965	124,741	196,088	228,010
London, Ont.	1855	169,569	194,416	223,222*
Longueuil, Que.	1920	24,131	25,593	97,590*
Mississauga, Ont.	1968	62,616	93,492	156,070
Montreal, Que.	1832	1,191,062	1,222,255*	1,214,352*
Montreal N., Que.	1959	48,433	67,806	89,139*
Niagara Falls, Ont.	1903	22,351	56,891*	67,163*
Oakville, Ont.	1857	10,366	52,793*	61,483*
Oshawa, Ont.	1924	62,415	78,082	91,587
Ottawa, Ont.	1854	268,206	290,741	302,341
Peterborough, Ont.	1905	47,185	56,177*	58,111*
Quebec, Que.	1832	171,979	166,984	186,088*
Regina, Sask.	1903	112,141	131,127*	139,469*
Saint John, NB	1785	55,153	51,567	89,039*
St. Catharines, Ont.	1876	84,472	97,101	109,722*
Ste-Foy, Que.	1955	29,716	48,298*	68,385*
St. James-Assiniboia, Man.	1969	44,434	59,255	71,431
St. John's, Nfld.	1888	63,633	79,884*	88,102*
St-Laurent, Que.	1955	49,805	59,479*	62,955*
St-Léonard, Que.	1963	4,893	25,328*	52,040*
Sarnia, Ont.	1914	50,976	54,552	57,644
Saskatoon, Sask.	1906	95,526	115,892*	126,449*
Sault Ste. Marie, Ont.	1912	43,088	74,594*	80,332
Sherbrooke, Que.	1875	66,554	75,690	80,711
Sudbury, Ont.	1930	80,120	84,888*	90,535
Thunder Bay, Ont.	1970	98,671	104,539	108,411
Toronto, Ont.	1834	672,407	664,584	712,786*
Trois-Rivières, Que.	1857	53,477	57,540*	55,869
Vancouver, BC	1886	384,522	410,375	426,256
Verdun, Que.	1912	78,317	76,832	74,718
Victoria, BC	1862	54,941	57,453	61,761
Windsor, Ont.	1892	114,367	192,544*	203,300*
Winnipeg, Man.	1873	265,429	257,005*	246,246

*Indicates a boundary change since the preceding census. Population totals in these cases are based on a different area, i.e., the boundaries at that particular census year.

5.9 Population of census metropolitan areas (based on 1971 boundaries) Census years 1951-71, and estimates for 1972

Census metropolitan area	1951	1956	1961	1966	1971	1972 (estimate)
Calgary	142,315	201,022	279,062	330,575	403,319	417,000
Chicoutimi-Jonquière	91,161	110,317	127,616	132,954	133,703	135,000
Edmonton	193,622	275,182	359,821	425,370	495,702	507,000
Halifax	138,427	170,481	193,353	209,901	222,637	224,000
Hamilton	281,901	341,513	401,071	457,410	498,523	505,000
Kitchener	107,474	128,722	154,864	192,275	226,846	232,000
London	167,724	196,338	226,669	253,701	286,011	290,000
Montreal	1,539,308	1,830,232	2,215,627	2,570,982	2,743,208	2,761,000
Ottawa-Hull	311,587	367,756	457,038	528,774	602,510	613,000
Quebec	289,294	328,405	379,067	436,918	480,502	487,000
Regina	72,731	91,215	113,749	132,432	140,734	144,000
Saint John, NB	80,689	88,375	98,083	104,195	106,744	109,000
St. Catharines-Niagara	189,046	233,034	257,796	285,453	303,429	307,000
St. John's, Nfld.	80,869	92,565	106,666	117,533	131,814	133,000
Saskatoon	55,679	72,930	95,564	115,900	126,449	128,000
Sudbury	80,543	107,889	127,446	136,739	155,424	157,000
Thunder Bay	73,713	87,624	102,085	108,035	112,093	113,000
Toronto	1,261,861	1,571,952	1,919,409	2,289,900	2,628,043	2,672,000
Vancouver	586,172	694,425	826,798	933,091	1,082,352	1,098,000
Victoria	114,859	136,127	155,763	175,262	195,800	199,000
Windsor	182,619	208,456	217,215	238,323	258,643	262,000
Winnipeg	357,229	412,741	476,543	508,759	540,262	550,000

5.10 Land area and density of population, by province, Census years 1951-71

Province or territory	Land area sq miles	Population per sq mile				
		1951	1956	1961	1966	1971
Newfoundland	143,045	2.53	2.90	3.20	3.45	3.65
Prince Edward Island	2,184	45.07	45.46	47.91	49.70	51.11
Nova Scotia	20,402	31.50	34.05	36.12	37.06	38.67
New Brunswick	27,835	18.53	19.93	21.48	22.16	22.80
Quebec	523,860	7.74	8.84	10.04	11.04	11.50
Ontario	344,092	13.36	15.71	18.12	20.23	22.39
Manitoba	211,775	3.67	4.01	4.35	4.55	4.66
Saskatchewan	220,182	3.78	4.00	4.20	4.34	4.21
Alberta	248,800	3.78	4.51	5.35	5.88	6.54
British Columbia	359,279	3.24	3.89	4.53	5.22	6.08
Canada (excl. the territories)	2,101,454	6.65	7.64	8.66	9.50	10.24
Yukon Territory	205,346	0.04	0.06	0.07	0.07	0.09
Northwest Territories	1,253,438	0.01	0.02	0.02	0.02	0.03
Canada	3,560,238	3.93	4.52	5.12	5.62	6.06

5.11 Number and percentage of the population classified as urban, and rural by non-farm and farm, by province, 1971

Province or territory	Urban		Rural		Farm		Total		Total population
	No.	%	No.	%	No.	%	No.	%	
Newfoundland	298,800	57.2	218,775	41.9	4,525	0.9	223,305	42.8	522,105
Prince Edward Island	42,780	38.3	47,725	42.7	21,130	18.9	68,860	61.7	111,640
Nova Scotia	447,400	56.7	315,290	40.0	26,270	3.3	341,555	43.3	788,960
New Brunswick	361,145	56.9	247,845	39.1	25,565	4.0	273,410	43.1	634,555
Quebec	4,861,240	80.6	861,215	14.3	305,300	5.1	1,166,520	19.4	6,027,765
Ontario	6,343,630	82.4	995,840	12.9	363,640	4.7	1,359,475	17.6	7,703,105
Manitoba	686,445	69.5	171,390	17.3	130,410	13.2	301,800	30.5	988,245
Saskatchewan	490,630	53.0	202,280	21.8	233,335	25.2	435,610	47.0	926,240
Alberta	1,196,250	73.5	195,590	12.0	236,025	14.5	431,620	26.5	1,627,875
British Columbia	1,654,405	75.7	456,700	20.9	73,520	3.4	530,215	24.3	2,184,620
Yukon Territory	11,215	61.0	7,120	38.7	55	0.3	7,170	39.0	18,390
Northwest Territories	16,830	48.4	17,955	51.6	25	0.1	17,980	51.7	34,805
Canada	16,410,785	76.1	3,737,730	17.3	1,419,795	6.6	5,157,525	23.9	21,568,310

5.12 Sex distribution of the population, by province, 1971 and sex ratios, 1961, 1966 and 1971

Province or territory	Population, 1971		Males to 100 females		
	Males	Females	1961	1966	1971
Newfoundland	266,110	256,000	105	104	104
Prince Edward Island	56,225	55,415	104	103	101
Nova Scotia	396,470	392,495	103	101	101
New Brunswick	319,420	315,135	102	101	101
Quebec	2,994,550	3,033,215	100	100	99

5.12 Sex distribution of the population, by province, 1971 and sex ratios, 1961, 1966 and 1971 (concluded)

Province or territory	Population, 1971		Males to 100 females		
	Males	Females	1961	1966	1971
Ontario	3,840,910	3,862,200	101	100	99
Manitoba	494,610	493,635	103	101	100
Saskatchewan	470,720	455,515	108	105	103
Alberta	827,785	800,090	107	104	103
British Columbia	1,100,375	1,084,250	104	103	101
Yukon Territory	9,920	8,470	127	119	117
Northwest Territories	18,280	16,530	126	118	111
Canada	10,795,370	10,772,945	102	101	100

5.13 Age distribution of the population, 1961, 1966 and 1971

Age group	Number			Percentage		
	1961	1966	1971	1961	1966	1971
0-4 years	2,256,401	2,197,387	1,816,155	12.4	11.0	8.4
5-9 "	2,079,522	2,300,857	2,254,005	11.4	11.5	10.4
10-14 "	1,855,999	2,093,513	2,310,740	10.2	10.5	10.7
15-19 "	1,432,559	1,837,725	2,114,345	7.9	9.2	9.8
20-24 "	1,183,646	1,461,298	1,889,400	6.5	7.3	8.8
25-29 "	1,209,297	1,241,794	1,584,125	6.6	6.2	7.3
30-34 "	1,271,810	1,241,697	1,305,425	7.0	6.2	6.1
35-39 "	1,270,924	1,286,144	1,263,870	7.0	6.4	5.9
40-44 "	1,118,961	1,257,028	1,262,530	6.1	6.3	5.9
45-49 "	1,015,316	1,089,915	1,239,040	5.6	5.4	5.7
50-54 "	863,188	988,264	1,052,540	4.7	4.9	4.9
55-59 "	705,835	816,300	954,725	3.9	4.1	4.4
60-64 "	583,635	663,410	777,020	3.2	3.3	3.6
65-69 "	487,102	531,709	619,960	2.7	2.7	2.9
70-74 "	402,175	427,207	457,380	2.2	2.1	2.1
75-79 "	274,237	300,365	325,510	1.5	1.5	1.5
80-84 "	146,817	177,319	204,170	0.8	0.9	0.9
85-89 "	60,784	76,790	100,010	0.3	0.4	0.5
90 years and over	20,039	26,158	37,380	0.1	0.1	0.2
Total	18,238,247	20,014,880	21,568,310	100.0	100.0	100.0

5.14 Estimated population by age group, sex and province, as at June 1, 1972 (thousands)

Province or territory	Age group and sex							
	0-4 years		5-9 years		10-14 years		15-19 years	
	Males	Females	Males	Females	Males	Females	Males	Females
Newfoundland	31.2	29.8	34.3	33.0	33.7	32.3	31.2	30.4
Prince Edward Island	5.1	4.8	6.2	5.9	6.6	6.4	6.1	5.9
Nova Scotia	35.1	33.4	42.1	40.1	44.2	42.0	41.9	39.7
New Brunswick	29.9	28.3	35.3	33.7	38.1	35.9	36.3	35.1
Quebec	231.3	220.9	310.0	295.0	341.8	328.3	321.7	311.6
Ontario	324.6	319.2	389.6	370.9	409.3	389.0	371.3	358.3
Manitoba	43.1	41.5	49.0	47.3	51.6	49.5	49.3	47.8
Saskatchewan	38.7	37.1	47.5	45.7	51.5	49.4	49.7	47.6
Alberta	76.8	73.0	89.5	86.1	94.5	90.0	84.6	80.9
British Columbia	91.1	86.7	106.7	101.6	115.4	110.9	106.8	101.8
Yukon Territory	1.1	1.0	1.2	1.1	1.1	1.0	0.8	0.8
Northwest Territories	2.7	2.6	2.8	2.7	2.3	2.1	1.6	1.5
Canada	910.7	878.3	1,114.2	1,063.1	1,190.1	1,136.8	1,101.3	1,061.4
	20-24 years		25-34 years		35-44 years		45-54 years	
	Males	Females	Males	Females	Males	Females	Males	Females
Newfoundland	23.6	24.0	33.0	32.2	25.9	23.7	23.5	21.5
Prince Edward Island	5.0	4.9	6.5	6.2	5.6	5.2	5.3	5.3
Nova Scotia	36.0	35.1	50.4	48.7	40.8	40.3	40.1	41.2
New Brunswick	30.4	29.3	39.9	37.7	31.4	31.5	31.1	31.7
Quebec	278.8	283.5	443.0	441.3	357.3	358.5	309.8	323.6
Ontario	345.8	350.7	552.6	541.2	481.5	460.7	431.9	439.7
Manitoba	44.2	43.8	63.8	61.6	52.7	51.4	52.4	55.0
Saskatchewan	36.7	35.0	49.8	49.0	48.6	46.6	50.6	50.1
Alberta	73.3	74.3	114.9	112.7	101.4	92.8	83.9	82.7
British Columbia	98.4	97.0	161.0	152.8	137.0	123.7	122.3	126.0
Yukon Territory	0.9	0.9	2.0	1.6	1.4	1.0	0.9	0.7
Northwest Territories	1.7	1.7	3.1	2.7	2.1	1.8	1.3	1.1
Canada	974.8	980.2	1,520.0	1,487.7	1,285.7	1,237.2	1,153.1	1,178.6

5.14 Estimated population by age group, sex and province, as at June 1, 1972 (thousands) (concluded)

Province or territory	Age group and sex							
	55-64 years		65-69 years		70 + years		All ages	
	Males	Females	Males	Females	Males	Females	Males	Females
Newfoundland	18.9	16.9	5.9	5.7	9.8	11.5	271.0	261.0
Prince Edward Island	4.9	4.8	1.8	1.8	3.8	4.9	56.9	56.1
Nova Scotia	35.2	34.5	12.1	12.7	20.9	28.0	398.8	395.7
New Brunswick	26.0	25.8	9.1	9.7	15.9	20.9	323.4	319.6
Quebec	225.4	243.0	76.0	89.4	107.7	152.6	3,002.8	3,047.7
Ontario	313.2	324.2	108.9	124.1	169.4	257.8	3,898.1	3,935.8
Manitoba	44.5	45.7	16.2	17.0	28.5	35.6	495.3	496.2
Saskatchewan	43.8	42.6	16.6	15.3	31.4	33.0	464.9	451.4
Alberta	60.9	59.6	22.4	20.8	38.3	40.5	840.5	813.4
British Columbia	96.9	100.4	35.3	35.2	62.0	78.0	1,132.9	1,114.1
Yukon Territory	0.5	0.5	0.2	0.1	0.1	—	10.2	8.7
Northwest Territories	0.9	0.5	0.2	0.2	0.2	0.2	18.9	17.1
Canada	871.1	898.5	304.7	332.0	488.0	663.0	10,913.7	10,916.8

5.15 Marital status of the population 15 years and over, by age group and sex, 1971

Age group	Sex	Single ¹	Married	Widowed	Divorced	Total
15-24 years	M	1,693,645	317,350	2,705	2,515	2,016,205
	F	1,374,290	603,585	3,945	5,730	1,987,540
	T	3,067,935	920,930	6,640	8,245	4,003,745
25-34 years	M	293,005	1,149,810	3,415	15,355	1,461,585
	F	179,150	1,214,385	9,450	24,975	1,427,960
	T	472,155	2,364,195	12,865	40,340	2,889,545
35-44 years	M	126,565	1,132,775	6,990	19,490	1,285,815
	F	88,225	1,099,585	26,605	26,160	1,240,580
	T	214,790	2,232,360	33,595	45,650	2,526,400
45-54 years	M	100,980	997,320	16,280	17,740	1,132,315
	F	84,990	973,660	77,965	22,650	1,159,265
	T	185,970	1,970,980	94,235	40,395	2,291,575
55-64 years	M	80,565	729,935	31,510	12,095	854,105
	F	83,640	620,580	159,310	14,105	877,630
	T	164,195	1,350,515	190,815	26,200	1,731,740
65-69 years	M	31,915	238,045	22,710	3,380	296,050
	F	34,595	178,810	106,945	3,560	323,910
	T	66,515	416,855	129,660	6,940	619,955
70 years and over	M	50,980	323,525	107,525	3,780	485,810
	F	68,145	198,245	368,680	3,570	638,640
	T	119,125	521,765	476,200	7,350	1,124,445
Total	M	2,377,645	4,888,760	191,125	74,355	7,531,890
	F	1,913,025	4,888,845	752,895	100,760	7,655,525
	T	4,290,675	9,777,605	944,025	175,115	15,187,415

¹ The total number of single persons of all ages (including those under 15) amounted to 10,671,575, comprising 5,641,130 males and 5,030,445 females.

5.16 Mother tongues of the population, 1961 and 1971, and preliminary figures on language most often spoken in the home, 1971¹

Language group	Language first spoken and still understood				Language most often spoken at home	
	1961		1971		1971 ¹	
	No.	%	No.	%	No.	%
English	10,660,534	58.45	12,973,810	60.15	14,445,000	66.97
French	5,123,151	28.09	5,793,650	26.86	5,546,000	25.71
Italian	339,626	1.86	538,360	2.50	425,000	1.97
German	563,713	3.09	561,085	2.60	213,000	0.99
Ukrainian	361,496	1.98	309,855	1.44	145,000	0.67
Indian and Eskimo	166,531	0.91	179,820	0.83	138,000	0.64
Greek	40,455	0.22	104,455	0.48	87,000	0.40
Chinese	49,099	0.27	94,855	0.44	78,000	0.36
Portuguese	18,213	0.10	86,925	0.40	75,000	0.35
Polish	161,720	0.89	134,780	0.62	71,000	0.33
Magyar (Hungarian)	85,939	0.47	86,835	0.40	51,000	0.24
Netherlands	170,177	0.93	144,925	0.67	36,000	0.17
Croatian, Serbian, etc.	28,866	0.16	74,190	0.34	29,000	0.13
Yiddish	82,448	0.45	49,890	0.23	26,000	0.12
Czech and Slovak	51,423	0.28	45,150	0.21	25,000	0.12
Indo-Pakistani	4,505	0.02	32,555	0.15	23,000	0.11
Finnish	44,785	0.25	36,725	0.17	18,000	0.08
Spanish	6,720	0.04	23,815	0.11	18,000	0.08
Arabic ²	12,999	0.07	28,550	0.13	15,000	0.07
Russian	42,903	0.24	31,745	0.15	13,000	0.06

5.16 Mother tongues of the population, 1961 and 1971, and preliminary figures on language most often spoken in the home, 1971¹ (concluded)

Language group	Language first spoken and still understood				Language most often spoken at home 1971 ¹	
	1961		1971			
	No.	%	No.	%	No.	%
Japanese	17,856	0.10	16,890	0.08	11,000	0.05
Estonian	13,830	0.08	14,520	0.07	10,000	0.05
Lithuanian	14,997	0.08	14,725	0.07	10,000	0.05
Lettish	14,062	0.08	14,140	0.07	9,000	0.04
Danish	35,035	0.19	27,395	0.13	5,000	0.02
Romanian	10,165	0.06	11,300	0.05	4,000	0.02
Flemish	14,304	0.08	14,240	0.07	3,000	0.01
Swedish	32,632	0.18	21,680	0.10	2,000	0.01
Norwegian	40,054	0.22	27,405	0.13	2,000	0.01
Gaelic	7,533	0.04	21,200	0.10	1,000	--
Icelandic	8,993	0.05	7,860	0.04	1,000	--
Welsh	3,040	0.02	3,160	0.01	--	--
Other	10,443	0.06	41,830	0.19	33,000	0.15
Total	18,238,247	100.00	21,568,310	100.00	21,568,000	100.00

¹ Preliminary figures rounded to thousands. For final figures see 1971 Census reports, Cat. No. 92-759 or 92-726.

² Includes Syrian.

5.17 Numerical and percentage distribution of English, French, and other mother tongues, by province, 1961 and 1971

Province or territory	1961				1971			
	English	French	Other	Total	English	French	Other	Total
Nfld.	No. 451,530 % 98.6	3,150 0.7	3,173 0.7	457,853 100.0	514,516 98.5	3,639 0.7	3,949 0.8	522,104 100.0
PEI	No. 95,564 % 91.3	7,958 7.6	1,107 1.1	104,629 100.0	103,102 92.4	7,363 6.6	1,176 1.1	111,641 100.0
NS	No. 680,233 % 92.3	39,568 5.4	17,206 2.3	737,007 100.0	733,556 93.0	39,333 5.0	16,071 2.0	788,960 100.0
NB	No. 378,633 % 63.3	210,530 35.2	8,773 1.5	597,936 100.0	410,400 64.7	215,727 34.0	8,430 1.3	634,557 100.0
Que.	No. 697,402 % 13.3	4,269,689 81.2	292,120 5.6	5,259,211 100.0	789,185 13.1	4,867,250 80.7	371,329 6.2	6,027,764 100.0
Ont.	No. 4,834,623 % 77.5	425,302 6.8	976,167 15.7	6,236,092 100.0	5,971,570 77.5	482,042 6.3	1,249,494 16.2	7,703,106 100.0
Man.	No. 584,526 % 63.4	60,899 6.6	276,261 30.0	921,686 100.0	662,721 67.1	60,547 6.1	264,979 26.8	988,247 100.0
Sask.	No. 638,156 % 69.0	36,163 3.9	250,862 27.1	925,181 100.0	685,919 74.1	31,605 3.4	208,718 22.5	926,242 100.0
Alta.	No. 962,319 % 72.2	42,276 3.2	327,349 24.6	1,331,944 100.0	1,263,935 77.6	46,498 2.9	317,441 19.5	1,627,874 100.0
BC	No. 1,318,498 % 80.9	26,179 1.6	284,405 17.5	1,629,082 100.0	1,807,253 82.7	38,034 1.7	339,334 15.5	2,184,621 100.0
YT	No. 10,869 % 74.3	443 3.0	3,316 22.7	14,628 100.0	15,346 83.5	450 2.4	2,592 14.1	18,388 100.0
NWT	No. 8,181 % 35.6	994 4.3	13,823 60.1	22,998 100.0	16,306 46.8	1,162 3.3	17,339 49.8	34,807 100.0
Canada	No. 10,660,534 % 58.5	5,123,151 28.1	2,454,562 13.5	18,238,247 100.0	12,973,809 60.2	5,793,650 26.9	2,800,852 13.0	21,568,311 100.0

5.18 Numerical and percentage distribution of the population speaking one or both of the official languages, by province, 1961, and preliminary figures for 1971¹

Year and province or territory	English only		French only		English and French		Neither English nor French	
	No.	%	No.	%	No.	%	No.	%
1961								
Newfoundland	450,945	98.5	522	0.1	5,299	1.2	1,087	0.2
Prince Edward Island	95,296	91.1	1,219	1.2	7,938	7.6	176	0.2
Nova Scotia	684,805	92.9	5,938	0.8	44,987	6.1	1,277	0.2
New Brunswick	370,922	62.0	112,054	18.7	113,495	19.0	1,465	0.2
Quebec	608,635	11.6	3,254,850	61.9	1,338,878	25.5	56,848	1.1
Ontario	5,548,766	89.0	95,236	1.5	493,270	7.9	98,820	1.6
Manitoba	825,955	89.6	7,954	0.9	68,368	7.4	19,409	2.1
Saskatchewan	865,821	93.6	3,853	0.4	42,074	4.5	13,433	1.5
Alberta	1,253,824	94.1	5,534	0.4	56,920	4.3	15,666	1.2
British Columbia	1,552,560	95.3	2,559	0.2	57,504	3.5	16,459	1.0
Yukon Territory	13,679	93.5	38	0.3	825	5.6	86	0.6
Northwest Territories	13,554	58.9	109	0.5	1,614	7.0	7,721	33.6
Canada	12,284,762	67.4	3,489,866	19.1	2,231,172	12.2	232,447	1.3

5.18 Numerical and percentage distribution of the population speaking one or both of the official languages, by province, 1961, and preliminary figures for 1971¹ (concluded)

Year and province or territory	English only		French only		English and French		Neither English nor French	
	No.	%	No.	%	No.	%	No.	%
1971 ¹								
Newfoundland	512,000	98.0	1,000	0.1	9,000	1.8	1,000	0.1
Prince Edward Island	102,000	91.2	1,000	0.6	9,000	8.2	—	—
Nova Scotia	731,000	92.6	4,000	0.5	53,000	6.7	1,000	0.1
New Brunswick	397,000	62.5	101,000	15.9	136,000	21.5	1,000	0.1
Quebec	632,000	10.5	3,668,000	60.9	1,664,000	27.6	63,000	1.1
Ontario	6,724,000	87.3	93,000	1.2	716,000	9.3	170,000	2.1
Manitoba	882,000	89.2	5,000	0.5	81,000	8.2	21,000	2.1
Saskatchewan	867,000	93.6	2,000	0.2	46,000	5.0	11,000	1.2
Alberta	1,526,000	93.7	3,000	0.2	81,000	5.0	18,000	1.1
British Columbia	2,055,000	94.1	2,000	0.1	101,000	4.6	27,000	1.2
Yukon Territory	17,000	93.2	—	—	1,000	6.6	—	—
Northwest Territories	26,000	73.3	—	—	2,000	6.1	7,000	20.4
Canada	14,469,000	67.1	3,880,000	18.0	2,900,000	13.4	320,000	1.5

¹ Preliminary figures rounded to thousands. For final figures, see 1971 Census reports, Cat. No. 92-759 or 92-726.

5.19 Population by ethnic groups, 1951 and 1961, and preliminary figures for 1971¹

Ethnic group	1951		1961		1971 ¹	
	No.	%	No.	%	No.	%
British Isles	6,709,685	47.9	7,996,669	43.8	9,624,000	44.6
English	3,630,344	25.9	4,195,175	23.0		
Irish	1,439,635	10.3	1,753,351	9.6		
Scottish	1,547,470	11.0	1,902,302	10.4		
Welsh and other	92,236	0.7	145,841	0.8		
French	4,319,167	30.8	5,540,346	30.4	6,180,000	28.7
Other European	2,553,722	18.2	4,116,849	22.6	4,959,000	23.0
Austrian	32,231	0.2	106,535	0.6	42,000	0.2
Belgian	35,148	0.2	61,382	0.3	51,000	0.2
Czech and Slovak	63,959	0.5	73,061	0.4	82,000	0.4
Danish	42,671	0.3	85,473	0.5	76,000	0.3
Finnish	43,745	0.3	59,436	0.3	59,000	0.3
German	619,995	4.4	1,049,599	5.8	1,317,000	6.1
Greek	13,966	0.1	56,475	0.3	124,000	0.6
Hungarian	60,460	0.4	126,220	0.7	132,000	0.6
Icelandic	23,307	0.2	30,623	0.2	28,000	0.1
Italian	152,245	1.1	450,351	2.5	731,000	3.4
Jewish	181,670	1.3	173,344	1.0	297,000	1.4
Lithuanian	16,224	0.1	27,629	0.2	25,000	0.1
Netherlands	264,267	1.9	429,679	2.4	426,000	2.0
Norwegian	119,266	0.8	148,681	0.8	179,000	0.8
Polish	219,845	1.6	323,517	1.8	316,000	1.5
Portuguese	—	—	—	—	97,000	0.4
Romanian	23,601	0.2	43,805	0.2	27,000	0.1
Russian	91,279	0.7	119,168	0.7	64,000	0.3
Spanish	—	—	—	—	28,000	0.1
Swedish	97,780	0.7	121,757	0.6	102,000	0.5
Ukrainian	395,043	2.8	473,337	2.6	580,000	2.7
Yugoslavic	21,404	0.2	68,587	0.4	105,000	0.5
Other	35,616	0.2	88,190	0.5	70,000	0.3
Asiatic	72,827	0.5	121,753	0.7	286,000	1.3
Chinese	32,528	0.2	58,197	0.3	119,000	0.6
Japanese	21,663	0.2	29,157	0.2	37,000	0.2
Other	18,636	0.1	34,399	0.2	129,000	0.6
Other	354,028	2.5	462,630	2.5	520,000	2.4
Eskimo	9,733	0.1	11,835	0.1	18,000	0.1
Native Indian	155,874	1.1	208,286	1.1	297,000	1.4
Negro	18,020	0.1	32,127	0.2	34,000	0.2
West Indian	—	—	—	—	28,000	0.1
Other and not stated	170,401	1.2	210,382	1.2	144,000	0.7
Total	14,009,429	100.0	18,238,247	100.0	21,568,000	100.0

¹ Preliminary figures rounded to thousands. For final figures, see 1971 Census reports, Cat. No. 92-762 or 92-723.

5.20 Principal religious denominations of the population, 1951 and 1961, and preliminary figures for 1971¹

Religious denomination	1951		1961		1971 ¹	
	No.	%	No.	%	No.	%
Adventist	21,398	0.2	25,999	0.1	29,000	0.1
Anglican Church of Canada	2,060,720	14.7	2,409,068	13.2	2,544,000	11.8
Baptist	519,585	3.7	593,553	3.3	667,000	3.1
Christian Reformed	—	—	62,257	0.3	83,000	0.4
Greek Orthodox	172,271	1.2	239,766	1.3	317,000	1.5
Jehovah's Witnesses	34,596	0.2	68,018	0.4	175,000	0.8
Jewish	204,836	1.5	254,368	1.4	276,000	1.3

5.20 Principal religious denominations of the population, 1951 and 1961, and preliminary figures for 1971¹ (concluded)

Religious denomination	1951		1961		1971 ¹	
	No.	%	No.	%	No.	%
Lutheran	444,923	3.2	662,744	3.6	716,000	3.3
Mennonite ²	125,938	0.9	152,452	0.8	182,000	0.8
Mormon	32,888	0.2	50,016	0.3	67,000	0.3
Pentecostal	95,131	0.7	143,877	0.8	220,000	1.0
Presbyterian	781,747	5.6	818,558	4.5	872,000	4.0
Roman Catholic	6,069,496	43.3	8,342,826	45.7	9,975,000	46.2
Salvation Army	70,275	0.5	92,054	0.5	120,000	0.6
Ukrainian (Greek) Catholic ³	191,051	1.4	189,653	1.0	228,000	1.1
United Church of Canada	2,867,271	20.5	3,664,008	20.1	3,768,000	17.5
Other	317,303	2.2	531,287	2.9	1,329,000	6.2
Total	14,009,429	100.0	18,238,247	100.0	21,568,000	100.0

¹ Preliminary figures rounded to thousands. For final figures, see 1971 Census reports, Cat. No. 92-763 or 92-724.

² Includes "Hutterites".

³ Includes "Other Greek Catholic".

5.21 Country of birth of the population, 1951 and 1961, and preliminary figures for 1971¹

Country of birth	1951		1961		1971 ¹	
	No.	%	No.	%	No.	%
Canada	11,949,518	85.3	15,393,984	84.4	18,273,000	84.7
United Kingdom	912,482	6.5	969,715	5.3	933,000	4.3
Other Commonwealth countries	20,567	0.1	47,887	0.3	170,000	0.8
United States	282,010	2.0	283,908	1.6	310,000	1.4
European countries	801,618	5.7	1,468,058	8.0	1,684,000	7.8
Germany	42,693	0.3	189,131	1.0	211,000	1.0
Italy	57,789	0.4	258,071	1.4	386,000	1.8
Netherlands	41,457	0.3	135,033	0.7	134,000	0.6
Poland	164,474	1.2	171,467	0.9	160,000	0.7
USSR	188,292	1.3	186,653	1.0	160,000	0.7
Other	306,913	2.2	527,703	2.9	634,000	2.9
Asiatic countries	37,145	0.3	57,761	0.3	119,000	0.6
Other	6,089	—	16,934	0.1	79,000	0.4
Total	14,009,429	100.0	18,238,247	100.0	21,568,000	100.0

¹ Preliminary figures rounded to thousands. For final figures, see 1971 Census reports, Cat. No. 92-760 or 92-727.

5.22 Indian bands and registered population, by province and type of residence, Dec. 31, 1971

Province or territory	Number of bands	Registered band membership				
		Total	On reserves	Off reserves	Crown land	Not stated
Prince Edward Island	1	451	269	182	—	—
Nova Scotia	12	4,788	3,360	1,414	14	—
New Brunswick	15	4,541	3,378	1,163	—	—
Quebec	39	28,449	17,244	6,691	4,514	—
Ontario	111	56,553	32,154	19,774	4,624	1
Manitoba	54	36,851	26,948	7,966	1,936	1
Saskatchewan	67	37,565	26,952	9,413	1,198	2
Alberta	41	30,021	23,205	4,970	1,844	2
British Columbia	191	49,194	32,496	16,176	522	—
Yukon Territory	13	2,561	—	857	1,704	—
Northwest Territories	16	6,645	—	494	6,151	—
Canada	560	257,619	166,006	69,100	22,507	6

5.23 Households and average persons per household, by province, 1961, 1966 and 1971

Province or territory	Households			Average persons per household		
	1961	1966	1971	1961	1966	1971
Newfoundland	87,940	96,632	110,475	5.0	5.0	4.6
Prince Edward Island	23,942	25,360	27,895	4.2	4.2	3.9
Nova Scotia	175,341	185,245	208,425	4.0	4.0	3.7
New Brunswick	132,715	141,761	158,100	4.4	4.2	3.9
Quebec	1,191,469	1,389,115	1,605,750	4.2	4.0	3.7
Ontario	1,640,881	1,876,545	2,228,160	3.7	3.6	3.4
Manitoba	239,754	259,280	288,720	3.7	3.6	3.3
Saskatchewan	245,424	260,822	267,845	3.6	3.6	3.4
Alberta	349,816	393,707	464,945	3.7	3.6	3.4
British Columbia	459,534	543,075	668,305	3.4	3.3	3.2
Yukon Territory and Northwest Territories	7,920	8,931	12,685	4.2	4.3	4.0
Canada	4,554,736	5,180,473	6,041,305	3.9	3.7	3.5

5.24 Households by type, 1961, 1966 and 1971

Type of household	Number			Percentage		
	1961	1966	1971	1961	1966	1971
Total households	4,554,736	5,180,473	6,041,300	100.0	100.0	100.0
Family households	3,948,935	4,376,409	4,933,450	86.7	84.5	81.7
One-family households	3,780,992	4,246,753	4,812,360	83.0	82.0	79.7
Family of household head	3,734,581	4,209,549	4,773,900	82.0	81.3	79.0
Without additional persons	3,262,610	3,754,530	4,285,960	71.6	72.5	71.0
With additional persons	471,971	455,019	487,935	10.4	8.8	8.0
Family other than that of household head	46,411	37,204	38,465	1.0	0.7	0.6
Two-or-more family households	167,943	129,656	121,085	3.7	2.5	2.0
Including family of household head	165,703	128,325	120,000	3.6	2.5	2.0
With no family of household head	2,240	1,331	1,090	1	1	1
Non-family households	605,801	804,064	1,107,855	13.3	15.5	18.3
One person only	424,750	589,571	811,835	9.3	11.4	13.4
Two or more persons	181,051	214,493	296,020	4.0	4.1	5.0

¹ Less than 0.05%.

5.25 Households by age and sex of head, 1961, 1966 and 1971

Age and sex of head	Number			Percentage		
	1961	1966	1971	1961	1966	1971
Total household heads	4,554,736	5,180,473	6,041,300	100.0	100.0	100.0
Male	3,962,923	4,430,080	5,044,065	87.0	85.5	83.5
Female	591,813	750,393	997,240	13.0	14.5	16.5
Under 25 years	179,725	269,065	414,470	3.9	5.2	6.9
Male	159,420	227,040	334,750	3.5	4.4	5.5
Female	20,305	42,025	79,720	0.4	0.8	1.3
25-34 years	938,389	1,014,676	1,265,290	20.6	19.6	20.9
Male	894,796	954,508	1,154,085	19.6	18.4	19.1
Female	43,593	60,168	111,205	1.0	1.2	1.8
35-44 years	1,072,159	1,190,133	1,252,500	23.5	23.0	20.7
Male	1,001,147	1,102,647	1,142,540	22.0	21.3	18.9
Female	71,012	87,486	109,960	1.6	1.7	1.8
45-54 years	936,625	1,052,705	1,173,055	20.6	20.3	19.4
Male	833,040	928,751	1,022,330	18.3	17.9	16.9
Female	103,585	123,954	150,725	2.3	2.4	2.5
55-64 years	681,014	803,338	955,995	15.0	15.5	15.8
Male	558,443	655,003	764,230	12.3	12.6	12.6
Female	122,571	148,335	191,765	2.7	2.9	3.2
65-69 years	266,099	298,002	358,775	5.8	5.8	5.9
Male	198,175	215,140	256,305	4.4	4.2	4.2
Female	67,924	82,862	102,475	1.5	1.6	1.7
70 years and over	480,725	552,554	621,220	10.6	10.7	10.3
Male	317,902	346,991	369,825	7.0	6.7	6.1
Female	162,823	205,563	251,395	3.6	4.0	4.2

5.26 Families and persons per family, by province, 1961, 1966 and 1971

Province or territory	Families			Average persons per family		
	1961	1966	1971	1961	1966	1971
Newfoundland	89,267	97,011	108,135	4.7	4.6	4.4
Prince Edward Island	21,969	22,728	24,260	4.2	4.2	4.0
Nova Scotia	161,894	166,237	180,720	4.0	4.0	3.8
New Brunswick	124,653	129,307	140,430	4.3	4.3	4.0
Quebec	1,103,822	1,229,301	1,357,185	4.2	4.2	3.9
Ontario	1,511,478	1,657,933	1,881,840	3.6	3.7	3.6
Manitoba	215,831	222,735	236,000	3.7	3.8	3.6
Saskatchewan	211,776	216,674	215,760	3.8	3.9	3.7
Alberta	305,671	331,158	382,110	3.8	3.9	3.7
British Columbia	394,023	445,297	533,625	3.6	3.6	3.5
Yukon Territory and Northwest Territories	7,060	7,885	10,620	4.3	4.5	4.3
Canada	4,147,444	4,526,266	5,070,680	3.9	3.9	3.7

5.27 Families by type, 1961, 1966 and 1971

Type of family	Number			Percentage		
	1961	1966	1971	1961	1966	1971
Total families	4,147,444	4,526,266	5,070,680	100.0	100.0	100.0
Maintaining own household	3,911,529	4,345,718	4,898,290	94.3	96.0	96.6
Not maintaining own household	235,915	180,548	172,390	5.7	4.0	3.4
Related	157,120	134,854	126,775	3.8	3.0	2.5
Not related	78,795	45,694	45,615	1.9	1.0	0.9
Lodging	72,416	38,583	40,705	1.7	0.8	0.8
Other	6,379	7,111	4,910	0.2	0.2	0.1

5.28 Husband-wife families and one-parent families by age of head, 1961, 1966 and 1971

Age of head	1961		1966		1971	
	Number	%	Number	%	Number	%
Total family heads	4,147,444	100.0	4,526,266	100.0	5,070,680	100.0
Husband-wife families	3,800,026	91.6	4,154,381	91.8	4,591,935	90.6
Under 25 years	174,574	4.2	214,742	4.7	292,885	5.8
25-34 years	920,871	22.2	945,374	20.9	1,087,900	21.4
35-44 years	989,141	23.8	1,069,471	23.6	1,072,485	21.2
45-54 years	792,269	19.1	874,492	19.3	940,320	18.5
55-64 years	505,109	12.2	593,864	13.1	684,335	13.5
65 years and over	418,062	10.1	456,438	10.1	514,015	10.1
One-parent families	347,418	8.4	371,885	8.2	478,745	9.4
Male	75,203	1.8	71,502	1.6	100,680	2.0
Under 25 years	1,510	0.0	2,407	0.0	4,225	0.1
25-34 years	6,551	0.2	5,559	0.1	16,535	0.3
35-44 years	11,684	0.3	12,176	0.3	22,215	0.4
45-54 years	15,671	0.4	15,918	0.4	22,525	0.4
55-64 years	13,522	0.3	13,313	0.3	16,375	0.3
65 years and over	26,265	0.6	22,129	0.5	18,805	0.4
Female	272,215	6.6	300,383	6.6	378,065	7.4
Under 25 years	10,993	0.3	12,542	0.3	25,295	0.5
25-34 years	30,662	0.7	36,327	0.8	66,665	1.3
35-44 years	52,498	1.3	59,515	1.3	78,350	1.5
45-54 years	59,539	1.4	68,592	1.5	85,165	1.7
55-64 years	46,578	1.1	50,480	1.1	59,505	1.2
65 years and over	71,945	1.7	72,927	1.6	63,090	1.2

5.29 Families by mother tongue of head, by province, 1971

Province or territory	Total family heads	Mother tongue of family head					
		English		French		Other	
		No.	%	No.	%	No.	%
Newfoundland	108,135	106,125	98.1	970	0.9	1,040	1.0
Prince Edward Island	24,260	22,230	91.6	1,665	6.8	365	1.6
Nova Scotia	180,720	165,320	91.5	10,520	5.8	4,880	2.7
New Brunswick	140,435	93,355	66.5	44,780	31.9	2,300	1.6
Quebec	1,357,185	180,890	13.3	1,070,380	78.9	105,910	7.8
Ontario	1,881,835	1,368,260	72.7	120,255	6.4	393,315	20.9
Manitoba	235,995	142,665	60.4	14,905	6.3	78,425	33.3
Saskatchewan	215,760	139,605	64.7	8,365	3.9	67,785	31.4
Alberta	382,115	266,850	69.8	12,340	3.2	102,925	27.0
British Columbia	533,630	412,035	77.2	11,500	2.2	110,095	20.6
Yukon Territory and Northwest Territories	10,615	5,995	56.5	430	4.0	4,200	39.5
Canada	5,070,680	2,903,325	57.2	1,296,105	25.6	871,250	17.2

5.30 Children living at home by age group and province, 1971

Province or territory	Under 6 years	6-14 years	15-18 years	19-24 years	Total children living at home
Newfoundland	74,040	117,810	44,210	23,190	259,255
Prince Edward Island	12,075	22,730	8,925	5,460	49,195
Nova Scotia	83,850	152,720	59,635	35,380	331,595
New Brunswick	69,820	129,775	52,465	32,095	284,150
Quebec	585,985	1,165,420	471,095	355,885	2,578,380
Ontario	772,620	1,411,225	531,915	330,405	3,046,160
Manitoba	102,600	179,870	70,535	39,980	392,985
Saskatchewan	95,765	180,835	71,955	31,370	379,930
Alberta	181,865	326,695	118,120	54,150	680,825
British Columbia	210,115	391,485	146,595	79,095	827,285
Yukon Territory and Northwest Territories	8,865	11,925	2,970	1,510	25,280
Canada	2,197,605	4,090,480	1,578,420	988,525	8,855,035

5.31 Summary of principal vital statistics, by province, 1951-71

Province or territory and year	Live births		Deaths		Natural increase ¹		Marriages		Divorces	
	No.	Rate ²	No.	Rate ²	No.	Rate ²	No.	Rate ²	No.	Rate ²
NEWFOUNDLAND										
Av. 1951-55	13,101	34.1	2,926	7.6	10,175	26.5	2,836	7.4	5	1.3
" 1956-60	14,934	34.6	3,114	7.2	11,820	27.4	3,032	7.0	5	1.2
" 1961-65	15,104	31.8	3,142	6.6	11,962	25.2	3,331	7.0	5	1.0
1966	14,084	28.5	3,072	6.2	11,012	22.3	3,728	7.6	11	2.2
1967	12,844	25.7	3,117	6.2	9,727	19.5	4,021	8.0	11	2.2
1968	12,820	25.3	3,123	6.2	9,697	19.1	4,242	8.4	15	3.0
1969	13,000	25.3	3,005	5.8	9,995	19.5	4,279	8.3	103	20.0
1970	12,539	24.3	3,294	6.4	9,245	17.9	4,466	8.6	140	27.1
1971	12,767	24.5	3,199	6.1	9,568	18.4	4,685	9.0	150	28.7

5.31 Summary of principal vital statistics, by province, 1951-71 (continued)

Province or territory and year	Live births		Deaths		Natural increase ¹		Marriages		Divorces	
	No.	Rate ²	No.	Rate ²	No.	Rate ²	No.	Rate ²	No.	Rate ³
PRINCE EDWARD ISLAND										
Av. 1951-55	2,720	27.2	923	9.2	1,797	18.0	623	6.2	10	9.8
" 1956-60	2,674	26.6	953	9.5	1,721	17.1	645	6.4	4	3.9
" 1961-65	2,767	25.7	1,006	9.3	1,761	16.4	672	6.2	8	7.8
1966	2,199	20.3	1,048	9.7	1,151	10.6	752	6.9	18	16.6
1967	2,047	18.8	1,038	9.5	1,009	9.3	802	7.4	18	16.5
1968	2,105	19.1	990	9.0	1,115	10.1	750	6.8	20	18.2
1969	2,009	18.1 ^r	1,007	9.1 ^r	1,002	9.0 ^r	868	7.9	102	91.9
1970	1,957	17.8	1,015	9.2	942	8.6	913	8.3	65	59.1
1971	2,103	18.8	1,007	9.0	1,096	9.8	961	8.6	59	52.8
NOVA SCOTIA										
Av. 1951-55	18,246	27.5	5,802	8.8	12,444	18.7	5,283	8.0	212	32.0
" 1956-60	19,097	26.9	6,062	8.5	13,035	18.4	5,289	7.4	227	32.0
" 1961-65	18,526	24.7	6,312	8.4	12,214	16.3	5,313	7.1	277	36.9
1966	15,220	20.1	6,478	8.6	8,742	11.5	5,833	7.7	406	53.7
1967	14,312	18.8 ^r	6,638	8.7 ^r	7,674	10.1	6,189	8.2	394	51.8
1968	13,774	18.0 ^r	6,610	8.6 ^r	7,164	9.4	6,284	8.3	497	64.8
1969	13,618	17.6 ^r	6,663	8.6 ^r	6,955	9.0 ^r	6,568	8.6	791	102.1
1970	14,159	18.1	6,723	8.6	7,436	9.5	6,800	8.9	823	105.2
1971	14,250	18.1	6,682	8.5	7,568	9.6	6,883	8.7	721	91.4
NEW BRUNSWICK										
Av. 1951-55	16,496	31.0	4,576	8.6	11,920	22.4	4,306	8.1	167	31.4
" 1956-60	16,567	29.0	4,640	8.1	11,927	20.9	4,357	7.6	194	34.0
" 1961-65	15,668	25.8	4,749	7.8	10,919	18.0	4,531	7.5	199	32.7
1966	12,722	20.6	4,771	7.7	7,951	12.9	5,165	8.4	155	25.1
1967	12,353	19.9	4,894	7.9	7,459	12.0	5,452	8.8	292	47.1
1968	11,607	18.6	4,905	7.8 ^r	6,702	10.8 ^r	5,389	8.6	143	22.9
1969	11,695	18.6 ^r	4,849	7.7 ^r	6,846	10.9	5,705	9.1	347	55.3
1970	11,545	18.4	4,945	7.9	6,600	10.5	5,696	9.1	386	61.6
1971	12,187	19.2	4,943	7.8	7,244	11.4	6,149	9.7	483	76.1
QUEBEC										
Av. 1951-55	128,523	30.0	34,269	8.0	94,254	22.0	35,584	8.3	327	7.6
" 1956-60	139,844	28.6	35,714	7.3	104,130	21.3	36,798	7.5	403	8.2
" 1961-65	131,453	24.0	37,698	6.9	93,755	17.1	38,126	7.0	380	6.9
1966	109,878	19.0	38,680	6.7	71,198	12.3	44,411	7.7	988	17.1
1967	101,471	17.3	38,665	6.6	62,806	10.7	46,275	7.9	727	12.4
1968	96,622	16.3	39,537	6.7	57,085	9.6	46,004	7.8	606	10.2
1969	95,610	16.0	40,103	6.7	55,507	9.3	47,545	7.9	2,947	49.2
1970	91,757	15.3	40,392	6.7	51,365	8.6	49,606	8.2	4,865	80.9
1971	89,210	14.8	40,738	6.8	48,472	8.0	49,695	8.2	5,195	86.2
ONTARIO										
Av. 1951-55	128,861	26.1	44,715	9.0	84,146	17.1	45,213	9.1	2,430	49.2
" 1956-60	152,688	26.4	49,431	8.5	103,257	17.9	46,482	8.0	2,801	48.4
" 1961-65	152,629	23.5	52,664	8.1	99,965	15.4	46,794	7.2	3,342	51.3
1966	131,942	19.0	54,171	7.8	77,771	11.2	54,571	7.8	4,101	58.9
1967	127,509	17.9 ^r	54,878	7.7	72,631	10.2 ^r	58,377	8.2	4,350	61.0
1968	126,257	17.4 ^r	55,552	7.6	70,705	9.8 ^r	62,109	8.5	5,036	69.3
1969	130,398	17.7 ^r	55,707	7.5	74,691	10.2 ^r	67,150	9.0	11,845	160.4
1970	134,724	17.8	56,769	7.5	77,955	10.3	68,874	9.0	12,451	164.9
1971	130,395	16.9	56,623	7.4	73,772	9.5	69,590	9.0	12,189	158.2
MANITOBA										
Av. 1951-55	21,321	26.4	6,775	8.4	14,546	18.0	7,104	8.8	356	44.1
" 1956-60	22,408	25.6	7,293	8.3	15,115	17.3	6,600	7.5	315	35.9
" 1961-65	22,137	23.4	7,637	8.1	14,500	15.3	6,674	7.1	376	39.7
1966	18,007	18.7	7,938	8.2	10,069	10.5	7,312	7.6	524	54.4
1967	17,180	17.8	7,629	7.9	9,551	9.9	7,942	8.2	477	49.5
1968	17,424	17.9	7,878	8.1	9,546	9.8	8,291	8.5	465	47.9
1969	17,809	18.2	8,040	8.2	9,769	10.0	8,864	9.1	1,334	136.3
1970	18,248	18.6	7,856	8.0	10,392	10.6	9,008	9.2	1,234	125.5
1971	18,031	18.2	8,025	8.1	10,006	10.1	9,127	9.2	1,370	138.6
SASKATCHEWAN										
Av. 1951-55	23,554	27.5	6,547	7.6	17,007	19.9	6,876	8.0	231	26.9
" 1956-60	24,046	26.9	6,753	7.5	17,293	19.4	6,395	7.1	247	27.6
" 1961-65	22,811	24.4	7,268	7.8	15,543	16.6	6,316	6.7	298	31.8
1966	19,037	19.9	7,427	7.8	11,610	12.1	6,987	7.3	321	33.6
1967	17,993	18.8	7,441	7.8	10,552	11.0	7,579	7.9	399	41.7
1968	18,197	19.0	7,498	7.8	10,699	11.2	7,747	8.1	384	40.0
1969	17,592	18.4 ^r	7,492	7.8	10,100	10.7 ^r	7,668	8.0	882	92.1
1970	16,443	17.5	7,472	7.9	8,971	9.6	7,317	7.8	871	92.6
1971	16,054	17.3	7,413	8.0	8,641	9.3	7,813	8.4	813	87.8
ALBERTA										
Av. 1951-55	31,087	30.6	7,527	7.4	23,560	23.2	9,750	9.6	612	60.4
" 1956-60	36,920	30.6	8,329	6.9	28,591	23.7	10,230	8.5	788	65.1
" 1961-65	37,004	26.5	9,317	6.7	27,687	19.8	10,581	7.6	1,226	87.5
1966	30,592	20.9	9,677	6.6	20,915	14.3	11,879	8.1	1,567	107.1
1967	30,691	20.6	9,523	6.4	21,168	14.2	12,903	8.7	1,736	116.5
1968	30,149	19.8	9,963	6.5	20,186	13.3	13,640	8.9	1,916	125.7
1969	30,855	19.8	9,921	6.4	20,934	13.4	14,846	9.5	3,446	221.0
1970	31,967	20.0	10,112	6.3	21,855	13.7	15,285	9.6	3,771	236.4
1971	30,545	18.8	10,525	6.5	20,020	12.3	15,614	9.6	3,652	224.3
BRITISH COLUMBIA										
Av. 1951-55	31,347	25.1	12,233	9.8	19,114	15.3	11,131	8.9	1,461	116.9
" 1956-60	38,930	25.7	13,980	9.2	24,950	16.5	11,955	7.9	1,514	100.0
" 1961-65	36,753	21.5	15,236	8.9	21,517	12.6	11,927	7.0	1,592	93.1
1966	32,502	17.3	16,290	8.7	16,212	8.6	14,682	7.8	2,124	113.4
1967	32,899	16.9	16,170	8.3	16,729	8.6	16,026	8.2	2,734	140.6
1968	33,687	16.8	16,828	8.4	16,859	8.4	16,914	8.4	2,220	110.8
1969	35,383	17.2 ^r	17,377	8.4	18,006	8.8 ^r	18,284	8.8	4,224	205.0
1970	36,861	17.3	17,020	8.0	19,841	9.3	20,026	9.4	5,111	240.2
1971	34,852	16.0	17,783	8.1	17,069	7.9	20,389	9.3	4,942	226.2

5.31 Summary of principal vital statistics, by province, 1951-71 (concluded)

Province or territory and year	Live births		Deaths		Natural increase ¹		Marriages		Divorces	
	No.	Rate ²	No.	Rate ²	No.	Rate ²	No.	Rate ²	No.	Rate ²
YUKON TERRITORY										
Av. 1951-55	413	43.0	90	9.4	323	33.6	94	9.8	..	..
" 1956-60	505	39.4	91	7.1	414	32.3	109	8.5	..	..
" 1961-65	509	34.9	87	6.0	422	28.9	107	7.3	17	118.0
1966	369	25.7	82	5.7	287	20.0	94	6.5	21	146.0
1967	385	25.7	73	4.9	312	20.8	133	8.9	21	140.0
1968	370	24.7	84	5.6	286	19.1	170	11.3	30	200.0
1969	462	28.9 ^r	95	5.9 ^r	367	23.0 ^r	169	11.3	42	262.5
1970	451	26.5	109	6.4	342	20.1	201	12.6	41	241.2
1971	506	27.5	104	5.7	402	21.8	166	9.0	47	255.6
NORTHWEST TERRITORIES										
Av. 1951-55	666	40.1	284	17.1	382	23.0	115	6.9	..	..
" 1956-60	943	46.7	310	15.3	633	31.4	155	7.7	1	..
" 1961-65	1,174	45.9	250	9.8	924	36.1	154	6.0	3	11.5
1966	1,158	40.3	229	8.0	929	32.3	182	6.3	3	10.4
1967	1,210	41.7	217	7.5	993	34.2	180	6.2	6	20.7
1968	1,298	43.3 ^r	228	7.6 ^r	1,070	35.7 ^r	226	7.3	11	36.7
1969	1,216	39.2 ^r	218	7.0 ^r	998	32.7 ^r	237	7.4	30	96.8
1970	1,337	40.5	254	7.7	1,083	32.8	236	7.2	17	51.5
1971	1,287	37.0	230	6.6	1,057	30.4	252	7.2	5	14.4
CANADA										
Av. 1951-55	416,334	28.0	126,666	8.5	289,668	19.5	128,915	8.7	5,811	39.1
" 1956-60	469,555	27.6	136,669	8.0	332,886	19.6	132,047	7.8	6,498	38.2
" 1961-65	456,534	24.1	145,368	7.7	311,166	16.4	134,524	7.1	7,723 ^a	40.7
1966	387,710	19.4	149,863	7.5	237,847	11.9	155,596	7.8	10,239	51.2
1967	370,894	18.2	150,283	7.4	220,611	10.8	165,879	8.1	11,165	54.8 ^r
1968	364,310	17.6	153,196	7.4	211,114	10.2	171,766	8.3	11,343	54.8 ^r
1969	369,647	17.6	154,477	7.4 ^r	215,170	10.2 ^r	182,183	8.7	26,093 ^r	124.2 ^r
1970	371,988	17.5	155,961	7.3	216,027	10.2	188,428	8.8	29,775	139.8
1971	362,187	16.8	157,272	7.3	204,915	9.5	191,324	8.9	29,626	137.4

¹ Excess births over deaths.² Per 1,000 population.³ Per 100,000 population.⁴ Includes 17 in Yukon Territory and three in Northwest Territories.5.32 Summary of principal vital statistics for incorporated urban centres¹ of 50,000 population or over², 1971 with averages for 1961-65 and 1966-70

Province and urban centre	Live births			Deaths			Marriages ³		
	Av. 1961-65	Av. 1966-70	1971	Av. 1961-65	Av. 1966-70	1971	Av. 1961-65	Av. 1966-70	1971
NEWFOUNDLAND									
*St. John's, c	1,966	1,812	1,872	542	608	611	736	932	1,068
PRINCE EDWARD ISLAND									
Charlottetown, c ⁴	417	307	299	232	246	267	157	157	264
NOVA SCOTIA									
Dartmouth, c	1,700	1,409	1,571	230	261	303	287	379	463
*Halifax, c	2,109	1,791	2,027	736	855	919	1,047	1,281	1,528
NEW BRUNSWICK									
*Saint John, c	1,743	1,598	1,710	690	766	843	607	728	847
QUEBEC									
*Hull, c	1,640	1,289	1,223	419	423	429	430	520	581
LaSalle, c	1,062	1,371	1,412	210	295	340	128	222	269
Laval, c	3,939	3,372	3,007	669	902	1,052	599	968	1,053
*Longueuil, c	639	1,674	1,767	225	442	536	185	567	607
*Montreal, c	28,576	20,066	16,211	10,309	10,462	10,274	10,548	11,766	11,865
*Montreal North, c	1,453	1,490	1,599	343	382	434	215	386	436
*Quebec, c	3,601	2,672	2,890	1,612	1,587	1,798	1,536	1,683	1,903
*Ste-Foy, c	1,038	1,098	1,109	158	190	236	130	389	512
*St-Laurent, t	1,059	948	834	272	352	377	287	401	428
*St-Léonard, c	316	834	1,000	45	124	178	22	170	237
Sherbrooke, c	1,812	1,505	1,462	590	592	617	572	698	802
*Trois-Rivières, c	1,384	947	795	438	433	416	447	475	468
Verdun, c	1,547	1,119	890	606	665	713	528	636	600
ONTARIO									
Brantford, c	1,191	1,045	954	550	622	580	489	612	651
*Burlington, t	1,203	1,347	1,434	274	324	374	246	415	510
*Etobicoke, b	5,117	4,081	3,818	1,311	1,502	1,763	881	1,215	1,423
*Guelph, c	1,010	996	1,064	364	405	430	352	509	502
*Hamilton, c	6,467	5,475	4,792	2,447	2,495	2,495	2,351	2,946	2,975
*Kingston, c	1,363	1,126	1,077	481	523	491	527	718	828
*Kitchener, c	2,081	2,131	2,254	564	670	670	655	1,009	1,145
*London, c	4,129	3,752	3,922	1,482	1,576	1,619	1,387	1,914	2,075
*Mississauga, t	1,697	2,402	2,986	344	458	511	287	511	760
*Niagara Falls, c	1,151	1,030	1,062	441	456	499	416	549	502
*Oakville, c	905	913	975	186	227	255	223	450	517
Oshawa, c	1,769	1,686	1,661	459	509	568	545	691	770
Ottawa, e	6,034	4,745	4,290	2,271	2,443	2,408	2,209	3,051	3,636
*Peterborough, c	1,035	890	871	442	489	507	384	571	614
*St. Catharines, c	1,910	1,764	1,835	696	791	775	666	909	1,077
Sarnia, c	1,220	1,034	973	358	399	409	373	537	602
*Sault Ste. Marie, c	1,439	1,512	1,434	385	487	514	488	645	808

5.32 Summary of principal vital statistics for incorporated urban centres¹ of 50,000 population or over², 1971 with averages for 1961-65 and 1966-70 (concluded)

Province and urban centre	Live births			Deaths			Marriages ³		
	Av. 1961-65	Av. 1966-70	1971	Av. 1961-65	Av. 1966-70	1971	Av. 1961-65	Av. 1966-70	1971
ONTARIO (concluded)									
Scarborough, b	6,419	5,150	5,546	1,237	1,546	1,636	962	1,765	1,964
*Sudbury, c	2,353	1,881	1,949	525	560	574	706	928	1,167
Thunder Bay, c	1,998	1,682	1,901	835	909	989	745	951	1,060
*Toronto, c	15,362	13,680	12,456	7,354	6,737	6,438	10,293	13,413	14,557
*Windsor, c	2,498	3,654	3,529	1,274	1,708	1,668	1,217	1,907	2,099
*York, b	3,497	3,101	2,869	1,022	1,009	962	488	523	539
*York, E., b	1,852	1,693	1,873	853	865	935	184	185	234
York, N., b	7,967	8,547	9,004	1,551	2,134	2,511	943	1,617	2,051
MANITOBA									
*St. James-Assiniboia, c	736	715	1,101	260	303	386	232	388	532
*Winnipeg, c	5,788	4,631	4,426	2,672	2,708	2,672	2,620	3,180	3,354
SASKATCHEWAN									
*Regina, c	3,265	2,840	2,817	820	928	888	1,004	1,263	1,432
*Saskatoon, c	2,770	2,676	2,472	769	911	917	923	1,281	1,290
ALBERTA									
*Calgary, c	8,083	7,503	7,665	2,002	2,238	2,444	2,410	3,483	4,148
*Edmonton, c	9,704	8,776	8,505	2,014	2,224	2,547	3,209	4,428	5,076
BRITISH COLUMBIA									
Burnaby, dm	2,057	1,837	1,869	769	857	893	530	798	876
Coquitlam, dm	745	793	773	147	181	227	105	175	218
North Vancouver, dm	864	797	801	228	233	293	140	251	338
Richmond, dm	1,093	898	991	231	265	315	171	291	417
Saanich, dm	1,042	827	726	416	485	495	199	334	385
Surrey, dm	1,761	1,577	1,542	550	637	694	288	451	541
Vancouver, c	6,743	6,317	5,336	4,758	4,928	4,869	3,881	5,044	5,229
Victoria, c	972	804	800	898	1,001	1,041	671	925	1,127

¹ Figures for certain urban places may not be comparable for the periods shown because of changes in area boundaries, particularly for those indicated by an asterisk: c=city, t=town, b=borough, and dm=district municipality.

² As at the date of the 1971 Census.

³ By place of occurrence.

⁴ Population fewer than 50,000 at date of 1971 Census but included as the largest urban centre in Prince Edward Island.

5.33 Percentage of births occurring in hospitals, by province, 1931-71

Year	PEI	NS	NB	Que.	Ont.	Man.	Sask.	Alta.	BC	YT	NWT	Canada ¹
1931	11.2	19.0	12.1	7.3	38.2	43.6	32.5	47.8	65.0	..	..	26.8
1941	32.7	50.4	30.8	17.6	67.5	73.6	63.2	77.1	87.3	..	..	48.9
1951	88.3	87.2	70.7	53.0	93.1	93.1	95.2	93.6	97.3	87.4	32.8	79.1
1956	95.2	93.9	84.7	71.2	97.3	95.8	97.6	96.6	98.3	87.7	44.6	88.4
1961	99.3	98.9	99.0	92.3	99.3	98.2	98.8	98.6	98.9	92.8	57.1	96.9
1966	99.8	99.6	99.8	98.8	99.7	98.9	99.3	99.0	99.2	93.2	77.6	99.2
1971	99.7	99.8	99.9	99.6	99.8	99.6	99.5	99.6	99.5	86.0	88.6	99.6

¹ Excludes Newfoundland.

5.34 Illegitimate live births and percentages of total live births, by province, 1951-71

Year	Nfld.	PEI	NS	NB	Que.	Ont.	Man.	Sask.	Alta.	BC	YT	NWT	Canada
<i>Number</i>													
Av. 1951-55	426	139	1,082	659	4,086	4,065	969	1,044	1,481	1,898	53	50	15,951
" 1956-60	587	139	1,201	687	4,675	4,891	1,166	1,194	1,941	2,505	72	102	19,160
" 1961-65	716	132	1,437	803	5,595	6,519	1,672	1,565	2,786	3,137	91	152	24,605
1966	832	145	1,551	882	6,366	8,476	1,844	1,923	3,198	3,926	72	176	29,391
1967	858	138	1,544	861	6,727	8,935	1,915	1,916	3,518	4,194	86	223	30,915
1968	948	156	1,453	889	7,018	9,463	2,102	2,148	3,614	4,502	79	257	32,629
1969	1,033	135	1,593	974	7,251	9,802	2,160	2,068	3,809	4,877	114	225	34,041
1970	1,122	178	1,609	1,069	7,307	10,248	2,337	2,217	4,082	5,035	119	265	35,588
1971	1,229	171	1,664	1,177	7,087	8,492	2,338	2,257	3,638	4,236	125	279	32,693
<i>Percentage of total live births</i>													
Av. 1951-55	3.2	5.1	5.9	4.0	3.2	3.2	4.5	4.4	4.8	6.1	12.9	7.5	3.8
" 1956-60	3.9	5.2	6.3	4.1	3.3	3.2	5.2	5.0	5.3	6.4	14.2	10.8	4.1
" 1961-65	4.7	4.8	7.8	5.1	4.3	4.3	7.6	6.9	7.5	8.5	17.8	13.0	5.4
1966	5.9	6.6	10.2	6.9	5.8	6.4	10.2	10.1	10.5	12.1	19.5	15.2	7.6
1967	6.7	6.7	10.8	7.0	6.6	7.0	11.1	10.6	11.5	12.7	22.3	18.4	8.3
1968	7.4	7.4	10.5	7.7	7.3	7.5	12.1	11.8	12.0	13.4	21.4	19.8	9.0
1969	7.9	6.7	11.7	8.3	7.6	7.5	12.1	11.8	12.3	13.8	24.7	18.5	9.2
1970	8.9	9.1	11.4	9.3	8.0	7.6	12.8	13.5	12.8	13.7	26.4	19.8	9.6
1971	9.6	8.1	11.7	9.7	7.9	6.5	13.0	14.1	11.9	12.2	24.7	21.7	9.0

5.35 Live births, by age of parents, 1971¹

Age group	Legitimate		Mothers		Illegitimate	
	Fathers				Mothers	
	No.	%	No.	%	No.	%
Under 20 years	5,680	1.8	26,353	8.2	14,127	45.7
Under 15 years	—	—	24	—	268	0.9
15 years	2	—	264	0.1	924	3.0
16 "	40	—	1,616	0.5	2,131	6.9
17 "	391	0.1	4,259	1.3	3,354	10.8
18 "	1,524	0.5	8,106	2.5	3,768	12.2
19 "	3,723	1.2	12,084	3.8	3,682	11.9
20-24 "	71,791	22.6	113,780	35.9	10,530	34.0
25-29 "	113,437	35.8	105,186	33.1	3,638	11.7
30-34 "	69,847	22.0	47,126	14.8	1,652	5.3
35-39 "	34,480	10.9	19,593	6.2	777	2.5
40-44 "	15,004	4.7	5,483	1.7	245	0.8
45-49 "	5,008	1.6	359	0.1	14	—
50 years or over	1,841	0.6	4	—	1	—
Total, stated ages	317,088	100.0	317,884	100.0	30,984	100.0
Ages not stated	868	...	72	...	480	...
Total, all ages	317,956	100.0	317,956	100.0	31,464	100.0

¹ Excludes Newfoundland.5.36 Number of live-born children in order of birth, by age of mother, 1971¹

Order of birth of child	Age of mother										% of total
	Under 15	15-19	20-24	25-29	30-34	35-39	40-44	45 or over	Age not stated	All ages	
1st child	288	33,258	65,618	32,918	7,236	1,830	380	15	465	142,008	40.7
2nd "	4	6,173	41,770	38,608	12,018	3,098	582	24	24	102,301	29.3
3rd "	—	679	12,514	22,118	12,212	3,739	693	33	11	51,999	14.9
4th "	—	67	3,296	9,112	7,713	3,516	757	41	5	24,507	7.0
5th "	—	4	834	3,465	4,179	2,661	700	45	6	11,894	3.4
6th "	—	—	213	1,533	2,370	1,764	583	30	1	6,494	1.9
7th "	—	—	46	610	1,287	1,176	495	32	2	3,648	1.0
8th "	—	—	11	289	783	882	346	41	2	2,354	0.7
9th "	—	—	1	106	493	570	282	26	3	1,481	0.4
10th "	—	—	—	38	245	427	265	21	1	997	0.3
11th "	—	—	—	14	124	283	199	16	1	637	0.2
12th "	—	—	—	3	70	197	148	17	1	436	0.1
13th "	—	—	—	—	21	110	108	5	—	244	0.1
14th "	—	—	—	—	10	54	73	11	—	148	—
15th "	—	—	—	—	6	38	49	9	—	102	—
16th "	—	—	—	—	1	14	28	4	—	47	—
17th "	—	—	—	—	1	6	21	2	—	30	—
18th "	—	—	—	—	—	1	10	3	—	14	—
19th "	—	—	—	—	—	—	5	2	—	7	—
20th or over	—	—	—	—	—	1	4	1	—	6	—
Not stated	—	7	7	10	9	3	—	—	30	66	—
Total	292	40,188	124,310	108,824	48,778	20,370	5,728	378	552	349,420	100.0

¹ Excludes Newfoundland.5.37 Percentage distribution of total live births, by order of birth, 1951-71¹

Year	1st child	2nd child	3rd child	4th and later children	Total
1951	28.3	25.4	17.2	29.1	100.0
1956	26.7	24.0	17.8	31.5	100.0
1961	25.9	23.2	18.0	32.9	100.0
1966	33.1	24.8	16.2	25.9	100.0
1967	36.0	25.7	15.4	22.9	100.0
1968	37.8	26.7	15.1	20.3	100.0
1969	38.5	27.5	15.2	18.8	100.0
1970	39.9	28.0	15.2	16.9	100.0
1971	40.6	29.3	14.9	15.2	100.0

¹ Excludes Newfoundland.

5.38 Stillbirths and ratio per 1,000 live births, by province, 1951-71¹

Year	Born to all mothers													Born to unmarried mothers	
	Nfld.	PEI	NS	NB	Que.	Ont.	Man.	Sask.	Alta.	BC	YT	NWT	Canada		
Number (28 weeks or more gestation)															
														No.	% of total
Av. 1951-55	222	52	337	291	2,705	2,017	336	313	425	374	6	11	7,088	316	4.6
" 1956-60	274	46	304	267	2,446	1,992	301	262	388	418	5	12	6,714	291	4.5
" 1961-65	261	47	256	220	1,727	1,818	278	242	358	370	5	19	5,600	327	6.1
1966	188	34	212	174	1,301	1,554	193	172	280	301	2	18	4,429	345	8.1
1967	183	24	203	169	1,232	1,419	205	189	286	311	5	22	4,248	372	9.2
1968	183	35	151	146	990	1,442	210	171	254	316	7	21	3,926	395	10.6
1969	162	30	174	165	905	1,296	174	168	270	331	2	17	3,694	390	11.0
1970	137	19	164	135	941	1,300	193	172	300	296	4	26	3,687	378	10.6
1971	158	23	139	138	807	1,221	164	159	254	310	6	17	3,396	425	13.1
Ratio															
														Ratio per 1,000 illegitimate live births	
Av. 1951-55	17.0	19.0	18.4	17.7	21.0	15.6	15.7	13.3	13.7	11.9	14.1	16.5	17.0	20.3	
" 1956-60	18.3	17.1	15.9	16.1	17.5	13.0	13.4	10.9	10.5	10.7	10.7	12.3	14.3	15.6	
" 1961-65	17.3	17.1	13.8	14.0	13.1	11.9	12.5	10.6	9.7	10.1	9.0	16.0	12.3	13.7	
1966	13.3	15.5	13.9	13.7	11.8	11.8	10.7	9.0	9.2	9.3	5.4	15.5	11.4	12.1	
1967	14.2	11.7	14.2	13.7	12.1	11.1	11.9	10.5	9.3	9.5	13.0	18.2	11.5	12.4	
1968	14.3	16.6	11.0	12.6	10.2	11.4	12.1	9.4	8.4	9.4	18.9	16.2	10.8	12.5	
1969	12.5	14.9	12.8	14.1	9.5	9.9	9.8	9.5	8.8	9.4	4.3	14.0	10.0	11.8	
1970	10.9	9.7	11.6	11.7	10.3	9.6	10.6	10.5	9.4	8.0	8.9	19.4	9.9	11.0	
1971	12.4	10.9	9.8	11.3	9.0	9.4	9.1	9.9	8.3	8.9	11.9	13.2	9.4	13.5	

¹ Excludes Newfoundland.

5.39 Stillbirths and ratio per 1,000 live births, by age of mother, 1971¹

Age group of mother	Live births	Stillbirths	Stillbirth ratio per 1,000 live births
Under 20 years	40,480	316	7.8
20-24	124,310	999	8.0
25-29	108,824	869	8.0
30-34	48,778	522	10.7
35-39	20,370	359	17.6
40-44	5,728	138	24.1
45-49	378	20	52.9
50 years or over	—	—	—
Age not stated	552	15	27.2
Total, all ages	349,420	3,238	9.3

¹ Excludes Newfoundland.

5.40 Stillbirths, by cause, 1971

International "P" List No.	Cause (eighth revision)	Male	Female	Total
1-4	Chronic circulatory and genito-urinary disease in mother	8	7	15
5-11	Other maternal conditions unrelated to pregnancy	58	57	115
12-17	Toxaemias of pregnancy	89	70	159
18-20	Maternal ante and intrapartum infection	18	10	28
21-23	Difficult labour with abnormality of bones, organs or tissues of pelvis	2	6	8
24-26	Difficult labour with disproportion	8	12	20
27-29	Difficult labour with malposition of foetus	42	21	63
30-32	Difficult labour with abnormality of forces of labour	6	6	12
33-35	Difficult labour with other and unspecified complications	25	7	32
36-41	Other complications of pregnancy and childbirth	67	60	127
42-46	Conditions of placenta	494	394	888
47-49	Conditions of umbilical cord	236	211	447
50-52	Birth injury without mention of cause	24	10	34
53-56	Haemolytic disease of newborn	73	64	137
57-60	Anoxic and hypoxic conditions not elsewhere classified	96	119	215
61-68	Other conditions of foetus and newborn	287	334	621
69-80	Congenital anomalies	196	256	452
81-88	Infections of foetus and newborn	1	2	3
89-94	Other diseases of foetus and newborn	11	9	20
95-100	External causes of injury to newborn	—	—	—
	All causes	1,741	1,655	3,396

5.41 Age-specific fertility rate and gross reproduction rate per 1,000 women, 1926-71¹

Year and province or territory	Age group						Total fertility rate	Gross reproduction rate
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	
Canada								
1926	29.0	139.9	177.4	153.8	114.6	50.7	6.0	3,357
1931	29.9	137.1	175.1	145.3	103.1	44.0	5.5	3,200
1936	25.7	112.1	144.3	126.5	90.0	36.3	4.4	2,696
1941	30.7	138.4	159.8	122.3	80.0	31.6	3.7	2,832
1946	36.5	169.6	191.4	146.0	93.1	34.5	3.8	3,374
1951	48.1	188.7	198.8	144.5	86.5	30.9	3.1	3,503
1956	55.9	222.2	220.1	150.3	89.6	30.8	2.9	3,858
1961	58.2	233.6	219.2	144.9	81.1	28.5	2.4	3,840
1966	48.2	169.1	163.5	103.3	57.5	19.1	1.7	2,812
1967	45.2	161.1	151.4	91.4	50.6	15.9	1.5	2,586
1968	43.4	152.5	147.1	85.8	44.4	13.8	1.4	2,441
1969	42.7	146.5	148.6	84.2	42.1	12.3	1.1	2,388
1970	43.4	142.1	145.6	80.7	38.5	11.0	0.9	2,311
1971	40.1	134.6	142.3	77.4	33.6	9.4	0.6	2,190
1971								
Prince Edward Island	47.4	173.1	168.6	100.4	68.7	19.1	0.8	2,890
Nova Scotia	58.3	157.9	147.4	83.7	39.2	13.1	0.7	2,501
New Brunswick	56.5	169.2	164.7	84.0	44.4	14.3	0.8	2,670
Quebec	19.9	107.8	128.3	75.5	34.8	10.6	0.8	1,889
Ontario	44.3	137.2	145.9	77.4	31.2	7.8	0.4	2,221
Manitoba	55.6	148.4	162.5	87.9	41.5	11.7	1.0	2,542
Saskatchewan	51.2	174.0	165.3	89.5	42.7	13.7	1.2	2,688
Alberta	54.0	159.8	154.4	78.1	31.5	8.7	0.5	2,435
British Columbia	49.0	141.2	136.5	67.5	26.2	6.2	0.4	2,135
Yukon Territory	122.5	205.4	159.1	89.4	43.3	8.9	2.5	3,143
Northwest Territories	121.5	256.6	230.9	160.9	123.1	67.6	15.7	4,881

¹ Excludes Newfoundland.

5.42 Percentage change in death rate for each age group, by sex, 1951-71

Age group	Male	Female	Age group	Male	Female
Under 1 year	-53.4	-55.6	50-54 years	-10.6	-29.2
1- 4 years	-57.1	-55.6	55-59 "	-9.9	-29.4
5- 9 "	-40.0	-42.9	60-64 "	-6.5	-31.7
10-14 "	-37.5	-40.0	65-69 "	-1.1	-30.5
15-19 "	0.0	-33.3	70-74 "	-4.8	-32.0
20-24 "	-5.3	-40.0	75-79 "	-9.8	-34.4
25-29 "	-16.7	-45.5	80-84 "	-12.3	-31.7
30-34 "	-23.8	-40.0	85 years or over	-15.5	-23.0
35-39 "	-12.0	-35.0			
40-44 "	-7.7	-30.0	All ages	-15.8	-21.8
45-49 "	-10.9	-33.3			

5.43 Numerical and percentage distribution of deaths by age group and sex, 1961, 1966 and 1971

Age group	Distribution								
	1961			1966			1971		
	No.	%	Rate ¹	No.	%	Rate ¹	No.	%	Rate ¹
Male									
Under 1 year	7,447	9.0	30.5	5,138	5.8	25.8	3,712	4.1	19.9
1- 4 years	1,154	1.4	1.3	988	1.1	1.1	679	0.7	0.9
5- 9 "	672	0.8	0.6	669	0.8	0.6	641	0.7	0.6
10-14 "	527	0.6	0.6	620	0.7	0.6	589	0.6	0.5
15-19 "	840	1.0	1.2	1,212	1.4	1.3	1,489	1.6	1.4
20-24 "	969	1.2	1.7	1,324	1.5	1.8	1,697	1.9	1.8
25-29 "	895	1.1	1.5	980	1.1	1.6	1,176	1.3	1.5
30-34 "	1,041	1.3	1.6	1,054	1.2	1.7	1,090	1.2	1.6
35-39 "	1,422	1.7	2.3	1,456	1.7	2.2	1,416	1.5	2.2
40-44 "	1,916	2.3	3.4	2,146	2.4	3.4	2,310	2.5	3.6
45-49 "	2,993	3.6	5.8	3,111	3.5	5.7	3,523	3.8	5.7
50-54 "	4,242	5.1	9.6	4,855	5.5	9.7	4,839	5.3	9.3
55-59 "	5,494	6.6	15.2	6,352	7.2	15.4	6,887	7.5	14.6
60-64 "	7,028	8.5	24.0	7,911	9.0	24.0	8,755	9.5	22.9
65-69 "	8,545	10.3	35.7	9,226	10.5	36.2	10,279	11.2	34.7
70-74 "	10,582	12.8	54.0	10,549	12.0	53.1	10,663	11.6	51.9
75-79 "	10,970	13.3	81.8	11,102	12.6	79.9	11,058	12.1	79.0
80-84 "	8,635	10.4	125.1	10,006	11.4	124.0	10,182	11.1	118.8
85 years or over	7,337	8.9	208.9	9,214	10.5	213.4	10,838	11.8	198.5
Total, all ages	82,709	100.0	9.0	87,913	100.0	8.7	91,823	100.0	8.5
Female									
Under 1 year	5,493	9.4	23.7	3,822	6.2	20.2	2,644	4.0	15.1
1- 4 years	844	1.4	1.0	775	1.3	0.9	551	0.8	0.8
5- 9 "	405	0.7	0.4	480	0.8	0.4	424	0.7	0.4
10-14 "	278	0.5	0.3	318	0.5	0.3	365	0.6	0.3
15-19 "	322	0.6	0.5	467	0.8	0.5	579	0.9	0.6
20-24 "	342	0.6	0.6	403	0.7	0.5	559	0.9	0.6
25-29 "	418	0.7	0.7	384	0.6	0.6	485	0.7	0.6
30-34 "	562	1.0	0.9	564	0.9	0.9	565	0.9	0.9
35-39 "	880	1.5	1.4	845	1.4	1.3	815	1.2	1.3

5.43 Numerical and percentage distribution of deaths by age group and sex, 1961, 1966 and 1971 (concluded)

Age group	Distribution								
	1961			1966			1971		
	No.	%	Rate ¹	No.	%	Rate ¹	No.	%	Rate ¹
Female (concluded)									
40-44 years	1,099	1.9	2.0	1,293	2.1	2.0	1,290	2.0	2.1
45-49 "	1,617	2.8	3.2	1,823	2.9	3.3	1,901	2.9	3.0
50-54 "	2,237	3.8	5.3	2,434	3.9	5.0	2,480	3.8	4.6
55-59 "	2,749	4.7	8.0	3,115	5.0	7.7	3,477	5.3	7.2
60-64 "	3,725	6.4	12.8	4,064	6.6	12.2	4,345	6.6	11.0
65-69 "	5,304	9.1	21.4	5,393	8.7	19.5	5,614	8.6	17.3
70-74 "	7,058	12.1	34.2	7,063	11.4	30.9	7,138	10.9	28.3
75-79 "	8,290	14.2	59.2	8,695	14.0	53.9	8,930	13.6	48.1
80-84 "	7,871	13.5	101.2	9,048	14.6	93.6	9,763	14.9	82.4
85 years or over	8,782	15.1	192.2	10,964	17.7	183.4	13,524	20.7	163.3
Total, all ages	58,276	100.0	6.5	61,950	100.0	6.2	65,449	100.0	6.1
	1961			1966			1971		
	Male		Female	Male		Female	Male		Female
Average age at death	59.7		63.1	62.0		65.9	63.3		68.2
Median age at death ²	67.9		72.2	68.4		73.5	68.5		74.7

¹ Per 1,000 population per age group.² The age above and below which half of the total number of annual deaths occurred.**5.44 Deaths and rate per 100,000 population according to the International Abbreviated List of 50 Causes, 1971**

Abbreviated "B" List No.	Detailed List No.	Cause (eighth revision)	Deaths	Rate per 100,000 population
1	000	Cholera	—	—
2	001	Typhoid fever	1	1
3	004, 006	Bacillary dysentery and amebiasis	4	1
4	008, 009	Enteritis and other diarrhoeal diseases	259	1.2
5	010-012	Tuberculosis of respiratory system	302	1.4
6	013-019	Other tuberculosis, including late effects	145	0.7
7	020	Plague	—	—
8	032	Diphtheria	4	1
9	033	Whooping cough	9	1
10	034	Streptococcal sore throat and scarlet fever	2	1
11	036	Meningococcal infection	47	0.2
12	040-043	Acute poliomyelitis	—	—
13	050	Smallpox	—	—
14	055	Measles	11	0.1
15	080-083	Typhus and other rickettsioses	—	—
16	084	Malaria	—	—
17	090-097	Syphilis and its sequelae	31	0.1
18	000-136	All other infective and parasitic diseases	398	1.8
19	140-209	Malignant neoplasms, including neoplasms of lymphatic and haematopoietic tissue	31,036	143.9
20	210-239	Benign neoplasms and neoplasms of unspecified nature	302	1.4
21	250	Diabetes mellitus	3,073	14.2
22	260-269	Avitaminoses and other nutritional deficiency	153	0.7
23	280-285	Anaemias	299	1.4
24	320	Meningitis	119	0.6
25	390-392	Active rheumatic fever	26	0.1
26	393-398	Chronic rheumatic heart disease	1,256	5.8
27	400-404	Hypertensive disease	1,710	7.9
28	410-414	Ischaemic heart disease	48,975	227.1
29	420-429	Other forms of heart disease	3,508	16.3
30	430-438	Cerebrovascular disease	16,067	74.5
31	470-474	Influenza	488	2.3
32	480-486	Pneumonia	5,016	23.3
33	490-493	Bronchitis, emphysema and asthma	3,482	16.1
34	531-533	Peptic ulcer	910	4.2
35	540-543	Appendicitis	95	0.4
36	550-553, 560	Intestinal obstruction and hernia	700	3.2
37	571	Cirrhosis of liver	1,937	9.0
38	580-584	Nephritis and nephrosis	705	3.3
39	600	Hyperplasia of prostate	262	2.4 ³
40	640-645	Abortion	6	1.7 ³
41	630-639	Other complications of pregnancy, childbirth and the puerperium	60	16.6 ³
42	650-678	Congenital anomalies	1,967	9.1
43	740-759	Birth injury, difficult labour and other anoxic and hypoxic conditions	1,632	7.6
44	760-763, 769-771, 773-775, 777-779	Other causes of perinatal mortality	1,667	7.7
45	780-796	Symptoms and ill-defined conditions	1,162	5.4
46	240-738	All other diseases	14,095	65.4
47	E810-E823	Motor vehicle accidents	5,690	26.4
48	E800-E807	All other accidents	6,341	29.4
49	E825-E949	Suicide and self-inflicted injuries	2,559	11.9
50	E950-E959	All other external causes	761	3.5
	E960-E999	All causes	157,272	729.2

¹ Less than 0.1 per 100,000 population.² Per 100,000 males.³ Per 100,000 live births.

5.45 Leading causes of death, by sex at various age groups, 1971

Cause	Male		Cause	Female	
	No.	Rate ¹		No.	Rate ¹
Under 1 year			Under 1 year		
Anoxia and hypoxia	839	449.5	Congenital anomalies	608	346.4
Congenital anomalies	726	389.0	Anoxia and hypoxia	517	294.5
Immaturity	407	218.1	Pneumonia	301	171.5
Pneumonia	292	156.4	Conditions of placenta and umbilical cord	222	126.5
Conditions of placenta and umbilical cord	197	105.5			
1-4 years			1-4 years		
Accidents	289	38.7	Accidents	200	28.1
Cancer	76	10.2	Congenital anomalies	97	13.6
Congenital anomalies	91	12.2	Cancer	60	8.4
Pneumonia	49	6.6	Pneumonia	51	7.2
Acute respiratory infections	12	1.6	Enteritis and other diarrhoeal diseases	7	1.0
5-19 years			5-19 years		
Accidents	1,765	51.8	Accidents	687	21.0
Cancer	246	7.2	Cancer	186	5.7
Suicide	150	4.4	Congenital anomalies	76	2.3
Congenital anomalies	100	2.9	Pneumonia	36	1.1
Pneumonia	54	1.6	Cardiovascular diseases	41	1.3
20-44 years			20-44 years		
Accidents	3,301	89.5	Cancer	1,045	28.9
Cardiovascular diseases	1,290	35.0	Accidents	797	22.0
Cancer	874	23.7	Cardiovascular diseases	533	14.7
Suicide	884	24.0	Suicide	308	8.5
Cirrhosis of liver	177	4.8	Cirrhosis of liver	87	2.4
45-64 years			45-64 years		
Cardiovascular diseases	11,850	596.6	Cancer	4,849	238.1
Cancer	5,698	286.8	Cardiovascular diseases	4,051	198.9
Accidents	1,676	84.4	Accidents	593	29.1
Bronchitis, emphysema and asthma	650	32.7	Diabetes mellitus	301	14.8
Suicide	638	32.1	Cirrhosis of liver	324	15.9
65 years or over			65 years or over		
Cardiovascular diseases	31,072	3,974.1	Cardiovascular diseases	28,810	2,993.1
Cancer	10,490	1,341.7	Cancer	7,492	778.4
Pneumonia	1,992	254.8	Pneumonia	1,626	168.9
Bronchitis, emphysema and asthma	2,065	264.1	Diabetes mellitus	1,321	137.2
Accidents	1,246	159.4	Accidents	1,143	118.7
All ages			All ages		
Cardiovascular diseases	44,277	410.1	Cardiovascular diseases	33,453	310.5
Cancer	17,398	161.2	Cancer	13,638	126.6
Accidents	8,480	78.6	Accidents	3,551	33.0
Pneumonia	2,820	26.1	Pneumonia	2,196	20.4
Bronchitis, emphysema and asthma	2,785	25.8	Diabetes mellitus	1,690	15.7

¹ Under one year rates are per 100,000 live births; all other age groups rates are per 100,000 population.

5.46 Infant deaths and stillbirths, by province and sex, 1951-71

Province or territory and year	Infant deaths (<1 yr)			Neonatal deaths (<28 days)					Post-neo-natal deaths (28 days to 1 yr)	Stillbirths (>27 weeks gesta-tion)	Perinatal deaths (stillbirths plus deaths <7 days) ¹
	Male	Female	Total	Male	Female	Total	<7 days	7-27 days			
CANADA											
Number											
1951	8,375	6,298	14,673	5,020	3,599	8,619	6,841	1,738	6,054	7,023	13,864
1961	7,447	5,493	12,940	4,966	3,598	8,564	7,523	1,041	4,376	6,019	13,542
1966	5,138	3,822	8,960	3,614	2,639	6,253	5,575	678	2,707	4,429	10,004
1971	3,712	2,644	6,356	2,623	1,862	4,485	3,956	529	1,871	3,396	7,352
Rate ¹											
1951	42.7	34.0	38.5	25.6	19.4	22.6	18.0	4.6	15.9	18.4	35.8
1961	30.5	23.7	27.2	20.3	15.6	18.0	15.8	2.2	9.2	12.7	28.1
1966	25.8	20.2	23.1	18.2	14.0	16.1	14.4	1.7	7.0	11.4	25.5
1971	19.9	15.1	17.5	14.1	10.6	12.4	10.9	1.5	5.2	9.4	20.1
NEW-FOUNDLAND											
Number											
1951	361	276	637	176	112	288	209	79	349	189	398
1961	335	253	588	197	128	325	269	56	263	281	550
1966	237	158	395	147	105	252	216	36	143	188	404
1971	173	120	293	123	84	207	175	32	86	158	333
Rate ¹											
1951	60.3	48.0	54.3	29.4	19.5	24.5	17.8	6.7	29.8	16.1	33.4
1961	41.7	33.5	37.7	24.5	16.9	20.8	17.3	3.6	16.9	18.0	34.7
1966	32.8	23.0	28.0	20.3	15.3	17.9	15.3	2.6	10.1	13.3	28.3
1971	26.3	19.4	22.9	18.7	13.5	16.2	13.7	2.5	6.7	12.4	25.8

5.46 Infant deaths and stillbirths, by province and sex, 1951-71 (continued)

Province or territory and year	Infant deaths (<1 yr)			Neonatal deaths (<28 days)					Post-neo-natal deaths (28 days to 1 yr)	Still-births (>27 weeks gesta-tion)	Perinatal deaths (stillbirths plus deaths <7 days) ¹
	Male	Female	Total	Male	Female	Total	<7 days	7-27 days			
PRINCE EDWARD ISLAND											
Number											
1951	60	30	90	29	17	46	33	13	44	56	89
1961	55	38	93	29	25	54	47	7	39	46	93
1966	34	23	57	25	17	42	40	2	15	34	74
1971	29	17	46	24	13	37	34	3	9	23	57
Rate ¹											
1951	43.7	23.5	33.9	21.1	13.3	17.4	12.4	4.9	16.5	21.1	32.9
1961	37.4	27.8	32.8	19.7	18.3	19.0	16.6	2.5	13.8	16.2	32.2
1966	29.9	21.7	25.9	21.9	16.0	19.1	18.2	0.9	6.8	15.5	33.1
1971	26.1	17.1	21.9	21.6	13.1	17.6	16.2	1.4	4.3	10.9	26.8
NOVA SCOTIA											
Number											
1951	344	250	594	218	134	352	298	54	242	319	617
1961	309	229	538	187	140	327	280	47	211	300	580
1966	221	163	384	149	107	256	219	37	128	212	431
1971	160	105	265	108	72	180	148	32	85	139	287
Rate ¹											
1951	38.9	30.2	34.7	24.7	16.2	20.6	17.4	3.2	14.1	18.6	35.4
1961	31.0	24.3	27.8	18.8	14.9	16.9	14.4	2.4	10.9	15.5	29.5
1966	28.1	22.1	25.2	19.0	14.5	16.8	14.4	2.4	8.4	13.9	27.9
1971	21.8	15.2	18.6	14.7	10.4	12.6	10.4	2.2	6.0	9.8	19.9
NEW BRUNSWICK											
Number											
1951	472	363	835	241	199	440	334	106	395	293	627
1961	248	186	434	145	105	250	217	33	184	222	439
1966	163	143	306	114	77	191	172	19	115	174	346
1971	130	74	204	97	48	145	135	10	59	138	273
Rate ¹											
1951	57.6	46.0	51.9	29.4	25.2	27.4	20.8	6.6	24.5	18.2	38.3
1961	29.1	23.0	26.2	17.0	13.0	15.1	13.1	2.0	11.1	13.4	26.1
1966	24.9	23.2	24.1	17.4	12.5	15.0	13.5	1.5	9.1	13.7	26.8
1971	20.7	12.5	16.7	15.5	8.1	11.9	11.1	0.8	4.8	11.3	22.2
QUEBEC											
Number											
1951	3,335	2,486	5,821	1,864	1,311	3,175	2,398	777	2,646	2,768	5,166
1961	2,464	1,855	4,319	1,666	1,189	2,855	2,489	366	1,464	1,929	4,418
1966	1,565	1,211	2,776	1,137	876	2,013	1,792	221	763	1,301	3,093
1971	948	692	1,640	690	500	1,190	1,059	131	450	807	1,866
Rate ¹											
1951	53.7	42.3	48.1	30.0	22.3	26.3	19.8	6.4	21.8	22.9	41.8
1961	34.7	28.0	31.5	23.5	18.0	20.8	18.1	2.7	10.7	14.1	31.8
1966	27.7	22.7	25.3	20.1	16.4	18.3	16.3	2.0	7.0	11.8	27.8
1971	20.6	16.0	18.4	15.0	11.6	13.3	11.9	1.5	5.0	9.0	20.7
ONTARIO											
Number											
1951	2,010	1,535	3,545	1,389	1,040	2,429	2,033	396	1,116	1,975	4,008
1961	2,090	1,536	3,626	1,507	1,120	2,627	2,378	249	999	1,870	4,248
1966	1,540	1,129	2,669	1,126	830	1,956	1,772	184	713	1,554	3,326
1971	1,146	844	1,990	821	603	1,424	1,255	169	566	1,221	2,476
Rate ¹											
1951	33.9	27.6	30.9	23.5	18.7	21.2	17.7	3.4	9.7	17.2	34.3
1961	25.9	20.0	23.0	18.7	14.6	16.7	15.1	1.6	6.3	11.9	26.6
1966	22.8	17.5	20.2	16.7	12.9	14.8	13.4	1.4	5.4	11.8	24.9
1971	17.1	13.3	15.3	12.2	9.5	10.9	9.6	1.3	4.3	9.4	18.8
MANITOBA											
Number											
1951	369	289	658	209	169	378	301	77	280	340	641
1961	341	247	588	211	169	380	336	44	208	301	637
1966	231	152	383	154	95	249	218	31	134	193	411
1971	184	132	316	117	87	204	177	27	112	164	341
Rate ¹											
1951	35.6	30.2	33.0	20.1	17.7	19.0	15.1	3.9	14.0	17.0	31.6
1961	28.6	21.7	25.2	17.7	14.9	16.3	14.4	1.9	8.9	12.9	27.0
1966	25.1	17.3	21.3	16.7	10.8	13.8	12.1	1.7	7.5	10.7	22.6
1971	20.0	15.0	17.5	12.7	9.9	11.3	9.8	1.5	6.2	9.1	18.7
SASKATCHEWAN											
Number											
1951	353	323	676	226	175	401	338	63	275	303	641
1961	373	245	618	244	151	395	334	61	223	266	600
1966	278	183	461	195	114	309	271	38	152	172	443
1971	189	136	325	132	90	222	199	23	103	159	358
Rate ¹											
1951	31.8	30.4	31.1	20.3	16.5	18.5	15.6	2.9	12.6	13.9	29.1
1961	30.3	21.0	25.8	19.8	12.9	16.5	13.9	2.5	9.3	11.1	24.7
1966	28.3	19.9	24.2	19.8	12.4	16.2	14.2	2.0	8.0	9.0	23.1
1971	23.2	17.2	20.2	16.2	11.4	13.8	12.4	1.4	6.4	9.9	22.1

5.46 Infant deaths and stillbirths, by province and sex, 1951-71 (concluded)

Province or territory and year	Infant deaths (<1 yr)			Neonatal deaths (<28 days)					Post-neo-natal deaths (28 days to 1 yr)	Stillbirths (>27 weeks gestation)	Perinatal deaths (stillbirths plus deaths <7 days) ¹
	Male	Female	Total	Male	Female	Total	<7 days	7-27 days			
ALBERTA											
Number											
1951	531	358	889	345	212	557	462	95	332	402	864
1961	612	432	1,044	418	289	707	629	78	337	372	1,001
1966	376	264	640	256	179	435	399	36	205	280	679
1971	325	223	548	226	162	388	334	54	160	254	588
Rate ¹											
1951	38.6	27.0	32.9	25.1	16.0	20.6	17.1	3.5	12.3	14.9	31.5
1961	30.8	22.7	26.8	21.0	15.2	18.2	16.2	2.0	8.6	9.6	25.5
1966	24.2	17.6	20.9	16.4	11.9	14.2	13.0	1.2	6.7	9.2	22.0
1971	20.5	15.2	17.9	14.3	11.0	12.7	10.9	1.8	5.2	8.3	19.1
BRITISH COLUMBIA											
Number											
1951	487	352	839	299	214	513	435	78	326	365	800
1961	534	411	945	331	264	595	515	80	350	412	927
1966	440	339	779	288	218	506	447	59	273	301	748
1971	381	272	653	271	188	459	417	42	194	310	727
Rate ¹											
1951	33.8	25.8	29.9	20.7	15.7	18.3	15.5	2.8	11.6	13.0	28.1
1961	27.1	21.8	24.5	16.8	14.0	15.4	13.3	2.1	9.1	10.7	23.8
1966	26.5	21.4	24.0	17.3	13.7	15.6	13.8	1.8	8.4	9.3	22.8
1971	21.2	16.1	18.7	15.1	11.2	13.2	12.0	1.2	5.6	8.9	20.7
YUKON TERRITORY											
Number											
1951	10	9	19	4	2	6	..	..	13	2	8
1961	13	10	23	6	4	10	7	3	13	4	11
1966	9	11	20	6	3	9	8	1	11	2	10
1971	8	5	13	3	3	6	4	2	7	6	10
Rate ¹											
1951	57.8	53.3	55.6	23.1	11.8	17.5	..	..	38.1	5.8	23.3
1961	45.8	36.5	41.2	21.1	14.6	17.9	12.5	5.4	23.3	7.2	19.6
1966	48.6	59.8	54.2	32.4	16.3	24.4	21.7	2.7	29.8	5.4	27.0
1971	29.0	21.7	25.7	10.9	13.0	11.9	7.9	4.0	13.8	11.9	19.5
NORTHWEST TERRITORIES											
Number											
1951	43	27	70	20	14	34	..	..	36	11	26
1961	73	51	124	25	14	39	22	17	85	16	38
1966	44	46	90	17	18	35	21	14	55	18	39
1971	39	24	63	11	12	23	19	4	40	17	36
Rate ¹											
1951	135.6	81.3	107.9	63.1	42.2	52.4	..	..	55.5	16.9	39.4
1961	128.1	93.2	111.0	43.9	25.6	34.9	19.7	15.2	76.1	14.3	33.5
1966	73.8	81.9	77.7	28.5	32.0	30.2	18.1	12.1	47.5	15.5	33.2
1971	58.8	38.4	49.0	16.6	19.2	17.9	14.8	3.1	31.1	13.2	27.6

¹ Perinatal rates per 1,000 live- and still-born infants; all other rates per 1,000 live births.

5.47 Infant mortality, by cause, 1971

International List No.	Cause of death (eighth revision)	Neonatal deaths		Post-neonatal deaths		Total infant deaths	
		No.	Rate ¹	No.	Rate ¹	No.	Rate ¹
004, 008-009	Infective and parasitic diseases	51	14.1	116	32.0	167	46.1
010-019	Dysentery	15	4.1	65	17.9	80	22.1
033	Tuberculosis	—	—	7	1.9	7	1.9
036	Whooping cough	—	—	15	4.1	16	4.4
038	Meningococcal infection	1	0.3	7	1.9	35	9.7
052	Septicaemia	28	7.7	1	0.3	1	0.3
055	Chickenpox	—	—	1	0.3	1	0.3
056	Measles	—	—	1	0.3	2	0.6
062-066	Rubella	1	0.3	4	1.1	4	1.1
074	Viral encephalitis	—	—	—	—	—	—
090-097	Coxsackie virus diseases	1	0.3	—	—	1	0.3
	Syphilis	5	1.4	15	4.1	20	5.5
	Other infective and parasitic diseases	—	—	—	—	—	—
140-209	Neoplasms	9	2.5	21	5.8	30	8.3
191-192	Malignant neoplasms	1	0.3	17	4.7	18	5.0
204-207	Brain and nervous system	—	—	6	1.7	6	1.7
	Leukaemia	1	0.3	7	1.9	8	2.2
	Other malignant neoplasms	—	—	4	1.1	4	1.1
210-228	Benign neoplasms	6	1.7	4	1.1	10	2.8
230-239	Other neoplasms	2	0.6	—	—	2	0.6

5.47 Infant mortality, by cause, 1971 (concluded)

Inter-national List No.	Cause of death (eighth revision)	Neonatal deaths		Post-neonatal deaths		Total infant deaths	
		No.	Rate ¹	No.	Rate ¹	No.	Rate ¹
251	Allergic, endocrine and metabolic diseases	18	5.0	44	12.1	62	17.1
	Disorders of pancreatic, internal secretion, other than diabetes mellitus	2	0.6	3	0.8	5	1.4
254	Diseases of thymus gland	—	—	6	1.7	6	1.7
260-269	Avitaminoses and other nutritional deficiency	1	0.3	4	1.1	5	1.4
270-279	Other metabolic diseases	12	3.3	26	7.2	38	10.5
	Other of 240-279	3	0.8	5	1.4	8	2.2
	Blood diseases	2	0.6	15	4.1	17	4.7
280-285	Anaemias	—	—	4	1.1	4	1.1
286	Coagulation defects	1	0.3	1	0.3	2	0.6
	Other of 280-289	1	0.3	10	2.8	11	3.0
290-315	Mental disorders	—	—	1	0.3	1	0.3
	Diseases of the nervous system and sense organs	23	6.4	65	17.9	88	24.3
320	Meningitis	22	6.1	27	7.5	49	13.5
343	Cerebral spastic infantile paralysis	—	—	6	1.7	6	1.7
381-383	Otitis media and mastoiditis	—	—	10	2.8	10	2.8
	Other of 320-389	1	0.3	22	6.1	23	6.4
390-458	Diseases of the circulatory system	4	1.1	15	4.1	19	5.2
	Diseases of the respiratory system	119	32.9	566	156.3	685	189.1
460-466	Acute respiratory infections	4	1.1	77	21.3	81	22.4
470-474	Influenza	—	—	10	2.8	10	2.8
480-486	Pneumonia	112	30.9	402	111.0	514	141.9
490-493	Bronchitis, emphysema and asthma	1	0.3	15	4.1	16	4.4
	Other of 460-519	2	0.6	62	17.1	64	17.7
	Diseases of the digestive system	51	14.1	32	8.8	83	22.9
550-553	Hernia	36	9.9	1	0.3	37	10.2
560	Intestinal obstruction without mention of hernia	1	0.3	7	1.9	8	2.2
561	Non-infectious gastro-enteritis and colitis	2	0.6	7	1.9	9	2.5
	Other of 520-577	12	3.3	17	4.7	29	8.0
580-629	Diseases of the genito-urinary system	2	0.6	5	1.4	7	1.9
680-709	Diseases of the skin and subcutaneous tissue	5	1.4	5	1.4	10	2.8
710-738	Diseases of the musculoskeletal system and connective tissue	—	—	1	0.3	1	0.3
	Congenital anomalies	890	245.7	444	122.6	1,334	368.3
740-743	Brain, spinal cord and nervous system	259	43.9	142	66.8	401	110.7
746	Heart	255	70.4	152	42.0	407	112.4
747	Other circulatory system	53	14.6	36	9.9	89	24.6
748	Respiratory system	38	10.5	15	4.1	53	14.6
749-751	Digestive system	83	22.9	49	13.5	132	36.4
753	Urinary system	62	17.1	5	1.4	67	18.5
759	Multiple systems	70	19.3	34	9.4	104	28.7
	Other of 740-759	70	19.3	11	3.0	81	22.4
	Certain causes of perinatal mortality	3,254	898.4	41	11.3	3,295	909.8
760-761	Maternal conditions unrelated to pregnancy	57	15.7	—	—	57	15.7
762-763	Maternal toxæmia and infection	41	11.3	1	0.3	42	11.6
764-768	Difficult labour	112	30.9	1	0.3	113	31.2
769	Other complications of pregnancy and childbirth	361	99.7	2	0.6	363	100.2
770-771	Conditions of placenta and umbilical cord	328	90.6	4	1.1	332	91.7
772	Birth injury	161	44.5	—	—	161	44.5
774-775	Haemolytic disease of newborn	70	19.3	1	1.9	71	21.3
776	Anoxia and hypoxia	1,336	368.9	20	5.5	1,356	374.4
777	Immaturity	704	194.4	4	1.1	708	195.5
	Other of 760-779	84	23.2	8	2.2	92	25.4
780-796	Symptoms and ill-defined conditions	16	4.4	197	54.4	213	58.8
	Accidents, poisonings and violence	41	11.3	303	83.7	344	95.0
E810-E823	Motor vehicle accidents	3	0.8	24	6.6	27	7.5
E880-E887	Accidental falls	—	—	11	3.0	11	3.0
E890-E899	Fire accidents	2	0.6	16	4.4	18	5.0
E911-E912	Inhalation and ingestion	20	5.5	154	42.5	174	48.0
E913	Mechanical suffocation	5	1.4	75	20.7	80	22.1
	Other of E880-E999	11	3.0	23	6.4	34	9.4
	All causes	4,485	1,238.3	1,871	516.6	6,356	1,754.9

¹ Per 100,000 live births.

5.48 Infant deaths, by age, 1971

Time of death	Deaths		Cumulative deaths		Time of death	Deaths		Cumulative deaths	
	No.	%	No.	%		No.	%	No.	%
1st day	2,644	41.6	2,644	41.6	1st month	4,485	70.6	4,485	70.6
2nd "	549	8.6	3,193	50.2	2nd "	457	7.2	4,942	77.8
3rd "	310	4.9	3,503	55.1	3rd "	363	5.7	5,305	83.5
4th "	186	2.9	3,689	58.0	4th "	293	4.6	5,598	88.1
5th "	112	1.8	3,801	59.8	5th "	207	3.3	5,805	91.3
6th "	85	1.3	3,886	61.1	6th "	141	2.2	5,946	93.6
7th "	70	1.1	3,956	62.2	7th "	99	1.6	6,045	95.1
					8th "	89	1.4	6,134	96.5
1st week	3,956	62.2	3,956	62.2	9th "	77	1.2	6,211	97.7
2nd "	247	3.9	4,203	66.1	10th "	60	0.9	6,271	98.7
3rd "	147	2.3	4,350	68.4	11th "	40	0.6	6,311	99.3
4th "	135	2.1	4,485	70.6	12th "	45	0.7	6,356	100.0

5.49 Canadian life table, 1966

Age	Male Number living at each age	Number dying between each age and the next	Prob- ability of dying before reaching next birthday	Expec- tation of life yr	Female Number living at each age	Number dying between each age and the next	Prob- ability of dying before reaching next birthday	Expec- tation of life yr
At birth	100,000		.02525	68.75	100,000		.02008	75.18
1 year	97,475	2,525	.00160	69.53	97,992	2,008	.00133	75.71
2 years	97,319	156	.00105	68.64	97,862	130	.00088	74.81
3 "	97,217	102	.00091	67.71	97,776	86	.00070	73.88
4 "	97,129	88	.00076	66.77	97,708	68	.00063	72.93
5 "	97,055	74	.00067	65.82	97,647	61	.00055	71.97
10 "	96,787	268	.00046	61.00	97,445	202	.00030	67.12
15 "	96,516	271	.00093	56.16	97,291	154	.00041	62.22
20 "	95,915	601	.00168	51.50	97,056	235	.00054	57.37
25 "	95,060	855	.00170	46.94	96,785	271	.00059	52.52
30 "	94,307	753	.00154	42.29	96,474	311	.00076	47.68
35 "	93,540	767	.00188	37.62	96,046	428	.00110	42.88
40 "	92,508	1,032	.00287	33.01	95,416	630	.00170	38.15
45 "	90,893	1,615	.00465	28.55	94,437	979	.00270	33.51
50 "	88,299	2,594	.00783	24.31	92,901	1,536	.00424	29.02
55 "	84,119	4,180	.01267	20.38	90,568	2,333	.00648	24.70
60 "	77,861	6,258	.02001	16.81	87,101	3,467	.01004	20.58
65 "	68,984	8,877	.03033	13.63	81,941	5,160	.01578	16.71
70 "	57,548	11,436	.04425	10.83	74,373	7,568	.02508	13.14
75 "	44,004	13,544	.06651	8.37	63,481	10,892	.04244	9.94
80 "	29,145	14,859	.10018	6.36	48,208	15,273	.07318	7.26
85 "	15,593	13,552	.14560	4.79	29,887	18,321	.12196	5.16
90 "	6,192	9,401	.20493	3.60	13,353	16,534	.19348	3.60
95 "	1,641	4,551	.27799	2.71	3,586	9,767	.29246	2.48
100 "	252	1,389	.36616	2.04	438	3,148	.42360	1.69

5.50 Expectation of life, 1951, 1956, 1961 and 1966 (years)

Age	1951		1956		1961		1966	
	Male	Female	Male	Female	Male	Female	Male	Female
At birth	66.33	70.83	67.61	72.92	68.35	74.17	68.75	75.18
1 year	68.33	72.33	69.04	73.99	69.50	74.98	69.53	75.71
2 years	67.56	71.55	68.21	73.15	68.63	74.11	68.64	74.81
3 "	66.68	70.66	67.31	72.24	67.71	73.18	67.71	73.88
4 "	65.79	69.74	66.38	71.31	66.78	72.23	66.77	72.93
5 "	64.86	68.80	65.45	70.35	65.83	71.27	65.82	71.97
10 "	60.15	64.02	60.67	65.51	61.02	66.41	61.00	67.12
15 "	55.39	59.19	55.86	60.64	56.20	61.51	56.16	62.22
20 "	50.76	54.41	51.19	55.80	51.51	56.65	51.50	57.37
25 "	46.20	49.67	46.61	50.97	46.91	51.80	46.94	52.52
30 "	41.60	44.94	41.98	46.17	42.24	46.98	42.29	47.68
35 "	37.00	40.24	37.34	41.40	37.56	42.18	37.62	42.88
40 "	32.45	35.63	32.74	36.69	32.96	37.45	33.01	38.15
45 "	28.05	31.14	28.28	32.09	28.49	32.82	28.55	33.51
50 "	23.88	26.80	24.04	27.65	24.25	28.33	24.31	29.02
55 "	20.02	22.61	20.12	23.38	20.30	24.01	20.38	24.70
60 "	16.49	18.64	16.54	19.34	16.73	19.90	16.81	20.58
65 "	13.31	14.97	13.36	15.60	13.53	16.07	13.63	16.71
70 "	10.41	11.62	10.51	12.17	10.67	12.58	10.83	13.14
75 "	7.89	8.73	7.98	9.15	8.21	9.48	8.37	9.94
80 "	5.84	6.38	5.89	6.75	6.14	6.90	6.36	7.26
85 "	4.27	4.57	4.27	4.97	4.46	4.89	4.79	5.16
90 "	3.10	3.24	3.07	3.67	3.16	3.39	3.60	3.60
95 "	2.24	2.27	2.18	2.74	2.20	2.32	2.71	2.48
100 "	1.60	1.59	1.52	2.05	1.49	1.56	2.04	1.69

5.51 Expectation of life at selected ages, by region or province, 1951, 1956, 1961 and 1966 (years)

Region or province and age	1951		1956		1961		1966	
	Male	Female	Male	Female	Male	Female	Male	Female
ATLANTIC PROVINCES								
At birth	66.57	70.50	67.91	72.89	68.58	73.92	..	..
1 year	69.08	72.41	69.68	74.23	70.06	75.10	..	..
20 years	51.59	54.52	51.95	56.01	52.17	56.82	..	..
40 "	33.48	35.99	33.58	37.03	33.76	37.70	..	..
65 "	13.90	15.42	13.95	15.91	14.16	16.35	..	..
NEWFOUNDLAND								
At birth	..	..	..	..	..	..	68.94	74.43
1 year	..	..	..	..	..	..	70.22	75.41
20 years	..	..	..	..	..	..	52.27	57.08
40 "	..	..	..	..	..	..	33.78	37.83
65 "	..	..	..	..	..	..	14.31	16.22
PRINCE EDWARD ISLAND								
At birth	..	..	..	..	..	..	68.32	75.51
1 year	..	..	..	..	..	..	69.43	76.22
20 years	..	..	..	..	..	..	51.56	57.88
40 "	..	..	..	..	..	..	33.49	38.77
65 "	..	..	..	..	..	..	14.43	17.57
NOVA SCOTIA								
At birth	..	..	..	..	..	..	68.34	74.80
1 year	..	..	..	..	..	..	69.16	75.43
20 years	..	..	..	..	..	..	51.32	57.16
40 "	..	..	..	..	..	..	32.99	37.96
65 "	..	..	..	..	..	..	13.80	16.75
NEW BRUNSWICK								
At birth	..	..	..	..	..	..	68.53	76.26
1 year	..	..	..	..	..	..	69.30	75.97
20 years	..	..	..	..	..	..	51.58	57.79
40 "	..	..	..	..	..	..	33.35	38.53
65 "	..	..	..	..	..	..	14.01	17.04
QUEBEC								
At birth	64.42	68.58	66.13	71.02	67.28	72.77	67.88	73.91
1 year	67.19	70.71	68.11	72.56	68.71	73.80	68.77	74.57
20 years	49.76	52.92	50.36	54.43	50.82	55.54	50.81	56.25
40 "	31.54	34.36	31.91	35.42	32.29	36.38	32.33	37.05
65 "	12.81	14.17	12.88	14.73	13.16	15.27	13.24	15.79
ONTARIO								
At birth	66.87	71.85	67.80	73.57	68.32	74.40	68.71	75.53
1 year	68.34	72.91	68.76	74.25	69.14	74.95	69.29	75.87
20 years	50.58	54.76	50.81	55.95	51.03	56.53	51.14	57.45
40 "	32.03	35.75	32.24	36.74	32.35	37.27	32.44	38.17
65 "	13.07	14.92	12.97	15.56	13.05	15.90	13.10	16.72
PRAIRIE PROVINCES								
At birth	68.36	72.28	69.26	74.18	69.79	75.66	..	..
1 year	69.90	73.43	70.48	75.06	70.96	76.40	..	..
20 years	52.24	55.53	52.55	56.88	52.90	58.08	..	..
40 "	33.86	36.63	34.12	37.71	34.37	38.83	..	..
65 "	13.88	15.51	14.01	16.20	14.22	17.00	..	..
MANITOBA								
At birth	..	..	..	..	..	..	69.80	76.11
1 year	..	..	..	..	..	..	70.54	76.57
20 years	..	..	..	..	..	..	52.48	58.25
40 "	..	..	..	..	..	..	34.11	39.10
65 "	..	..	..	..	..	..	14.18	17.42
SASKATCHEWAN								
At birth	..	..	..	..	..	..	70.45	76.45
1 year	..	..	..	..	..	..	71.49	77.06
20 years	..	..	..	..	..	..	53.50	58.80
40 "	..	..	..	..	..	..	35.22	39.61
65 "	..	..	..	..	..	..	15.00	17.59
ALBERTA								
At birth	..	..	..	..	..	..	70.10	76.24
1 year	..	..	..	..	..	..	70.82	76.72
20 years	..	..	..	..	..	..	52.70	58.30
40 "	..	..	..	..	..	..	34.36	39.09
65 "	..	..	..	..	..	..	14.46	17.34
BRITISH COLUMBIA								
At birth	66.73	72.37	68.14	73.91	68.94	75.42	69.21	75.84
1 year	67.97	73.32	69.19	74.68	69.83	76.00	69.94	76.33
20 years	50.41	55.51	51.32	56.52	51.85	57.61	51.91	58.01
40 "	32.45	36.72	33.11	37.49	33.56	38.46	33.70	38.93
65 "	13.50	15.86	13.72	16.15	13.98	16.94	14.20	17.41

5.52 Marriages and rate per 1,000 population, by province, with percentage distribution of bridegrooms and brides by nativity, 1951, 1961, 1966 and 1971

Province or territory	Year	Total marriages	Rate per 1,000 population	Born in province where married		Born in other provinces		Born outside Canada	
				Grooms %	Brides %	Grooms %	Brides %	Grooms %	Brides %
Newfoundland	1951	2,517	7.0	85.2	96.7	2.4	1.9	12.4	1.4
	1961	3,306	7.2	88.0	97.2	3.8	1.6	8.2	1.2
	1966	3,728	7.6	89.2	96.6	4.2	1.7	6.7	1.7
	1971	4,685	9.0	91.6	95.3	4.2	3.3	4.2	1.4
Prince Edward Island	1951	583	5.9	82.3	91.1	12.9	6.0	4.8	2.9
	1961	624	6.0	81.7	89.6	15.4	7.2	2.9	3.2
	1966	752	6.9	77.3	89.2	18.5	9.0	4.3	1.7
	1971	961	8.6	78.9	88.1	17.4	9.5	3.7	2.4
Nova Scotia	1951	5,094	7.9	78.2	86.7	15.9	9.0	6.0	4.3
	1961	5,292	7.2	75.2	87.8	18.8	8.8	6.0	3.4
	1966	5,833	7.7	76.8	86.8	17.3	9.5	5.8	3.7
	1971	6,883	8.7	77.9	85.6	16.2	10.9	5.9	3.5
New Brunswick	1951	4,386	8.5	80.0	86.9	10.1	6.7	9.8	6.4
	1961	4,504	7.5	75.4	86.3	14.9	7.9	9.7	5.8
	1966	5,165	8.4	76.2	85.8	14.6	8.8	9.2	5.4
	1971	6,149	9.7	77.9	86.2	14.8	9.5	7.2	4.3
Quebec	1951	35,704	8.8	86.7	89.5	6.1	5.5	7.2	5.0
	1961	35,943	6.8	83.6	87.4	5.7	4.8	10.7	7.8
	1966	44,411	7.7	83.9	87.2	5.7	5.0	10.4	7.8
	1971	49,695	8.2	84.2	88.1	5.2	4.3	10.7	7.6
Ontario	1951	45,198	9.8	65.9	72.4	14.6	12.2	19.5	15.4
	1961	44,434	7.1	61.5	67.2	12.9	11.0	25.6	21.8
	1966	54,571	7.8	61.0	65.9	14.2	12.0	24.8	22.0
	1971	69,590	9.0	60.1	66.1	12.7	11.2	27.2	22.7
Manitoba	1951	7,366	9.5	67.9	75.1	15.4	13.3	16.8	11.6
	1961	6,512	7.1	66.6	74.5	18.5	14.5	14.8	11.0
	1966	7,312	7.6	67.7	75.6	18.2	13.9	14.1	10.4
	1971	9,127	9.2	67.1	75.2	17.7	13.8	15.1	11.0
Saskatchewan	1951	6,805	8.2	78.3	86.4	10.7	6.4	11.1	7.2
	1961	6,149	6.6	79.3	85.8	11.9	8.7	8.8	5.5
	1966	6,987	7.3	77.7	85.3	14.6	9.2	7.7	5.6
	1971	7,813	8.4	78.9	85.3	14.4	10.1	6.6	4.6
Alberta	1951	9,305	9.9	56.0	67.4	25.7	19.6	18.3	13.0
	1961	10,474	7.9	54.4	62.3	25.8	21.8	19.8	15.9
	1966	11,879	8.1	56.4	64.1	26.2	22.0	17.3	14.0
	1971	15,614	9.6	54.8	62.0	28.5	24.4	16.6	13.5
British Columbia	1951	11,272	9.7	35.5	41.6	43.1	43.0	21.3	15.5
	1961	10,964	6.7	36.4	45.9	35.9	32.4	27.7	21.8
	1966	14,682	7.8	42.0	51.2	34.5	29.0	23.6	19.8
	1971	20,389	9.3	43.1	50.5	32.1	29.3	24.9	20.3
Yukon Territory	1961	128	8.8	12.5	24.2	63.3	52.3	24.2	23.4
	1966	94	6.5	16.0	16.0	57.4	69.1	26.6	14.9
	1971	166	9.0	10.2	20.5	67.5	59.0	22.3	20.5
Northwest Territories	1961	145	6.3	54.5	61.4	35.9	31.7	9.7	6.9
	1966	182	6.3	51.1	62.6	39.0	29.7	9.9	7.7
	1971	252	7.2	41.3	55.6	43.3	33.3	15.5	11.1
Canada	1951 ¹	128,230	9.2	70.5	76.5	15.1	12.8	14.5	10.6
	1961	128,475	7.0	67.9	74.2	14.3	11.7	17.9	14.1
	1966	155,596	7.8	68.2	74.1	14.8	11.9	17.0	14.0
	1971	191,324	8.9	67.2	73.2	14.5	12.3	18.3	14.5

¹ Excludes Yukon Territory and Northwest Territories.

5.53 Brides and bridegrooms, by age and marital status, 1971

Age group	Brides				Percentage			
	Number				Spinsters	Widows	Divorced	Total
	Spinsters	Widows	Divorced	Total	Spinsters	Widows	Divorced	Total
12-14 years	85	—	—	85	—	—	—	—
15-19 "	52,108	16	63	52,187	30.8	0.2	0.4	27.3
20-24 "	90,465	196	1,920	92,581	53.5	2.5	13.4	48.4
25-29 "	17,707	385	3,445	21,537	10.5	4.8	24.0	11.3
30-34 "	4,324	417	2,627	7,368	2.6	5.3	18.3	3.9
35-39 "	1,775	488	1,954	4,217	1.0	6.2	13.6	2.2
40-44 "	1,024	712	1,575	3,311	0.6	9.0	11.0	1.7
45-49 "	636	1,009	1,325	2,970	0.4	12.8	9.2	1.6
50-54 "	387	1,153	774	2,314	0.2	14.6	5.4	1.2
55-59 "	290	1,127	423	1,840	0.2	14.3	2.9	1.0
60-64 "	148	966	158	1,272	0.1	12.2	1.1	0.7
65 years or over	114	1,432	86	1,632	0.1	18.1	0.6	0.9
Total, stated age	169,063	7,901	14,350	191,314	100.0	100.0	100.0	100.0
Age not stated	9	—	1	10	...	...	...	...
Total, all ages	169,072	7,901	14,351	191,324	100.0	100.0	100.0	100.0
Average age	yr	22.6	52.1	35.4	24.8	...	...	...
Median age ¹	"	21.3	53.2	33.0	21.8	...	...	...

5.53 Brides and bridegrooms, by age and marital status, 1971 (concluded)

Age group	Bridegrooms							
	Number				Percentage			
	Bachelors	Widowers	Divorced	Total	Bachelors	Widowers	Divorced	Total
12-14 years	—	—	—	—	—	—	—	—
15-19 "	13,692	1	2	13,695	8.1	—	—	7.2
20-24 "	100,093	34	688	100,815	59.2	0.5	4.4	52.7
25-29 "	37,986	134	2,821	40,941	22.5	2.0	18.2	21.4
30-34 "	9,023	183	2,984	12,190	5.3	2.7	19.2	6.4
35-39 "	3,586	323	2,477	6,386	2.1	4.7	16.0	3.3
40-44 "	1,889	427	2,130	4,446	1.1	6.2	13.7	2.3
45-49 "	1,097	635	1,733	3,465	0.6	9.3	11.2	1.8
50-54 "	651	867	1,140	2,658	0.4	12.6	7.3	1.4
55-59 "	420	1,020	780	2,220	0.2	14.9	5.0	1.2
60-64 "	242	968	439	1,649	0.1	14.1	2.8	0.9
65 years or over	257	2,267	326	2,850	0.2	33.0	2.1	1.5
Total, stated age	168,936	6,859	15,520	191,315	100.0	100.0	100.0	100.0
Age not stated	8	—	1	9	...	...	...	...
Total, all ages	168,944	6,859	15,521	191,324	100.0	100.0	100.0	100.0
Average age	yr 24.9	57.5	39.4	27.3	...	...	...	...
Median age ¹	" 23.5	59.0	37.6	24.0	...	...	...	...

¹ The age below and above which half of the marriages occurred.

5.54 Marriages by religious denominations of contracting parties, 1971

Denomination of bridegroom	Denomination of bride										Total marriages	Percentage of grooms
	Angli- can	Bap- tist	East- ern Ortho- dox	Jewish	Lu- ther- an	Pres- by- terian	Roman Catho- lic ¹	United Church	Other sects	Not stated		
Anglican	8,554	712	140	42	635	915	4,870	4,937	1,294	68	22,167	11.6
Baptist	713	2,292	18	6	149	214	979	1,048	470	8	5,897	3.1
Eastern Orthodox	177	32	1,854	4	79	37	591	303	137	13	3,227	1.7
Jewish	63	8	8	2,027	12	19	148	56	105	16	2,462	1.3
Lutheran	703	172	65	9	1,600	212	1,282	1,229	423	21	5,716	3.0
Presbyterian	992	197	17	10	173	1,478	1,227	1,438	311	8	5,851	3.1
Roman Catholic ¹	4,671	927	380	86	1,160	1,095	70,920	5,821	2,797	323	88,180	46.1
United Church	4,763	957	213	18	1,090	1,274	5,960	16,377	1,623	61	32,336	16.9
Other sects	1,883	567	99	80	544	464	3,801	2,586	13,766	82	23,872	12.5
Not stated	125	16	11	16	27	18	437	146	84	736	1,616	0.8
Total	22,644	5,880	2,805	2,298	5,469	5,726	90,215	33,941	21,010	1,336	191,324	100.0
Percentage of brides	11.8	3.1	1.5	1.2	2.9	3.0	47.2	17.7	11.0	0.7	100.0	62.5 ²

¹ Includes Greek Catholic.

² Percentage of marriages between contracting parties of the same religious denomination.

5.55 Number of divorces, by province, 1951-71

Year	Nfld.	PEI	NS	NB	Que.	Ont.	Man.	Sask.	Alta.	BC	YT	NWT	Canada
Av. 1951-55	5	10	212	167	327	2,430	356	231	612	1,461	..	..	5,811
" 1956-60	5	4	227	194	403	2,801	315	247	788	1,514	..	..	6,498
" 1961-65	5	8	277	199	380	3,342	375	298	1,226	1,592	17	3	7,723
1966	11	18	406	155	988	4,101	524	321	1,567	2,124	21	3	10,239
1967	11	18	394	292	727	4,350	477	399	1,736	2,734	21	6	11,165
1968	15	20	497	143	606	5,036	465	384	1,916	2,220	30	11	11,343
1969 ^r	103	102	791	347	2,947	11,845	1,334	882	3,446	4,224	42	30	26,093
1970	140	65	823	386	4,865	12,451	1,234	871	3,771	5,111	41	17	29,775
1971	150	59	721	483	5,195	12,189	1,370	813	3,652	4,942	47	5	29,626

5.56 Grounds for divorce, and number and custody of children, 1969-71 (divorces granted under the new legislation)

Item	Number			Percentage distribution (based on total divorces)		
	1969	1970	1971	1969	1970	1971
Grounds for divorce ¹						
Adultery	6,335	10,032	11,239	28.9	34.4	38.0
Physical cruelty	3,400	4,696	5,090	15.5	16.1	17.2
Mental cruelty	3,610	5,234	5,666	16.4	17.9	19.1
Separation	12,524	14,908	13,840	57.0	51.1	46.7
Desertion	2,396	2,507	1,986	10.9	8.6	6.7
Other grounds	1,789	1,763	1,618	8.1	6.0	5.5
Total, grounds	30,074	39,140	39,439	...	...	...
Total, divorces	21,964	29,168	29,605	...	...	...

5.56 Grounds for divorce, and number and custody of children, 1969-71 (divorces granted under the new legislation) (concluded)

Item	Number			Percentage distribution (based on total divorces)		
	1969	1970	1971	1969	1970	1971
Number of children (at divorce)						
0	12,061	13,683	13,221	54.9	46.9	44.7
1	4,101	6,000	6,171	18.7	20.6	20.8
2	3,124	5,008	5,411	14.2	17.2	18.3
3	1,586	2,616	2,820	7.2	9.0	9.5
4	659	1,180	1,249	3.0	4.0	4.2
5 or more	433	681	733	2.0	2.3	2.5
Total, divorces	21,964	29,168	29,605	100.0	100.0	100.0
Total, children	20,099	32,417	34,526	...	...	...
Custody of children						
Father petitioner						
Father	1,126	1,745	1,860	42.5	37.8	37.7
Mother	896	1,583	1,886	33.8	34.3	38.2
Other or no award	629	1,293	1,190	23.7	27.9	24.1
Total	2,651	4,621	4,936	100.0	100.0	100.0
Mother petitioner						
Father	131	254	304	1.8	2.3	2.7
Mother	6,621	9,633	10,181	91.3	88.7	88.9
Other or no award	500	977	963	6.9	9.0	8.4
Total	7,252	10,864	11,448	100.0	100.0	100.0

¹ There may be one or more grounds per divorce.

5.57 Divorces granted under the new legislation, by marital status of husbands and wives at time of marriage, and age at time of divorce, 1969-71

Item	1969		1970		1971	
	Husband	Wife	Husband	Wife	Husband	Wife
Marital status (at marriage)						
Single	20,278	20,029	27,085	26,736	27,459	27,173
Widowed	463	664	522	707	483	712
Divorced	1,223	1,271	1,561	1,725	1,663	1,720
Age (at divorce) ¹						
Under 20 years	11	100	8	149	11	180
20-24 "	815	2,109	1,420	3,487	1,743	3,991
25-29 "	2,940	3,581	4,725	5,648	5,395	6,204
30-34 "	3,004	2,990	4,869	4,748	5,207	4,854
35-39 "	3,058	2,823	4,566	4,069	4,446	3,976
40-44 "	2,780	2,760	3,878	3,619	3,970	3,593
45-49 "	2,581	2,477	3,306	2,943	3,204	2,789
50-54 "	1,899	1,671	2,363	1,885	2,208	1,762
55-59 "	1,581	1,028	1,693	1,161	1,454	1,020
60-64 "	928	525	962	544	920	507
65-69 "	539	273	529	253	446	215
70 years and over	327	148	308	128	261	118
Not stated	1,501	1,479	541	534	340	396
Average age:						
At divorce	42.0	38.8	40.2	37.1	39.4	36.3
Of petitioner	43.9	37.6	41.9	36.2	40.5	35.6
Total, divorces	21,964	21,964	29,168	29,168	29,605	29,605
Total, petitioners	7,968	13,996	10,710	18,458	10,878	18,727

¹ Figures subject to minor revisions.

5.58 Probability of divorce per 100 marriages, by age at marriage, duration of marriage and previous marital status of wife, if 1971 conditions remain constant

Duration of marriage	Marital status and age of wife at marriage									
	Single				Widowed			Divorced		
	<20	20-24	25-29	30-34	<25	25-29	30-34	<25	25-29	30-34
5 years	3.4	1.9	1.2	1.3	4.7	2.0	3.1	8.2	4.2	4.3
10 "	11.5	5.6	3.6	3.2	14.8	7.3	7.5	21.1	13.4	11.8
15 "	18.0	8.6	5.5	5.1	22.6	10.3	10.2	31.4	20.4	17.9
20 "	22.8	11.3	7.3	6.4	27.1	13.8	12.5	39.3	25.4	22.4
25 "	27.2	13.4	8.7	7.3	31.8	15.3	14.0	44.6	29.3	25.3
30 "	30.3	14.9	9.6	7.9	37.8	16.6	15.8	49.6	32.6	28.8

5.59 Immigrant arrivals, 1946-71

Year	Arrivals	Year	Arrivals	Year	Arrivals
1946	71,719	1955	109,946	1964	112,606
1947	64,127	1956	164,857	1965	146,758
1948	125,414	1957	282,164	1966	194,743
1949	95,217	1958	124,851	1967	222,876
1950	73,912	1959	106,928	1968	183,974
1951	194,391	1960	104,111	1969	161,531
1952	164,498	1961	71,689	1970	147,713
1953	168,868	1962	74,586	1971	121,900
1954	154,227	1963	93,151		

5.60 Immigrant arrivals, by country of former residence, 1970 and 1971

Country of former residence	1970	1971	Country of former residence	1970	1971
Commonwealth			France	4,410	2,966
British Isles			Germany, Federal Republic of	4,193	2,275
England	19,967	11,677	Greece	6,327	4,769
Northern Ireland	1,620	976	Hungary	461	373
Scotland	4,452	2,522	Italy	8,533	5,790
Wales	434	240	Netherlands	1,916	1,301
Lesser Isles	24	36	Poland	723	1,132
Total, British Isles	26,497	15,451	Portugal	7,902	9,159
Australia	3,461	2,300	Scandinavian countries		
Cyprus	298	246	Denmark	564	343
Guyana	2,090	2,384	Other	651	550
Hong Kong	4,509	5,009	Spain	808	613
India	5,670	5,313	Switzerland	2,098	1,024
Malta	263	223	Yugoslavia	5,672	2,997
New Zealand	924	602	Other	1,171	629
Pakistan	1,010	968	North America		
West Indies	11,642	9,880	Mexico	448	382
Other Commonwealth	2,581	2,639	United States	24,424	24,364
Total, Commonwealth	58,945	45,015	Other	1,213	1,338
Republic of Ireland	1,123	830	South America	2,853	2,674
Africa			Middle East		
Republic of South Africa	646	729	Egypt	913	730
Other	552	428	Israel	818	600
Asia	6,202	7,573	Lebanon	1,206	928
Europe			Other	917	1,068
Austria	745	407	Other countries	15	10
Belgium	660	505			
Finland	604	398	Total, all countries	147,713	121,900

5.61 Immigrant arrivals, by country of citizenship, 1970 and 1971

Country of citizenship	1970	1971	Country of citizenship	1970	1971
Australia	2,916	1,834	Netherlands	1,947	1,302
Austria	431	306	New Zealand	969	636
Belgium	454	327	Norway	248	139
Britain and colonies	30,281	20,290	Pakistan	1,129	1,122
Central America	153	126	Poland	874	1,264
Ceylon (Sri Lanka)	207	230	Portugal	8,700	9,862
China	3,465	2,877	Rhodesia	2	10
Czechoslovakia	1,411	386	South Africa	734	710
Denmark	470	334	South America	4,368	4,525
Egypt	986	783	Spain	912	628
Finland	681	434	Sweden	281	311
France	3,292	2,210	Switzerland	1,520	818
Germany, Federal Republic of	3,000	1,789	Trinidad and Tobago	4,811	4,096
Greece	6,506	4,857	Turkey	319	309
Haiti	987	1,113	Union of Soviet Socialist Republics	136	159
Hungary	541	430	United States	23,183	23,227
India	6,324	5,697	Yugoslavia	6,701	3,440
Ireland, Republic of	1,324	916	Other African	539	689
Israel	816	559	Other Asian	6,512	8,274
Italy	8,731	5,956	Other European	549	396
Jamaica	4,932	4,048	Stateless	1,642	1,364
Japan	785	815	Other	1,202	1,006
Lebanon	1,021	819			
Luxembourg	10	1	Total	147,713	121,900
Mexico	421	337			
Morocco	290	139			

5.62 Intended province of destination of male and female immigrants, 1970 and 1971

Province or territory	1970			1971		
	Male	Female	Total	Male	Female	Total
Newfoundland	310	320	630	432	387	819
Prince Edward Island	97	88	185	81	91	172
Nova Scotia	1,015	992	2,007	891	921	1,812
New Brunswick	555	515	1,070	518	520	1,038
Quebec	11,867	11,394	23,261	9,723	9,499	19,222
Ontario	40,207	40,525	80,732	31,530	32,827	64,357
Manitoba	3,007	2,819	5,826	2,550	2,751	5,301
Saskatchewan	836	873	1,709	697	729	1,426
Alberta	5,313	5,092	10,405	4,311	4,342	8,653
British Columbia	10,939	10,744	21,683	9,615	9,302	18,917
Yukon Territory and Northwest Territories	111	94	205	97	86	183
Canada	74,257	73,456	147,713	60,445	61,455	121,900

5.63 Sex distribution of immigrants, 1970 and 1971

Year	Males			Females			Total
	<18 years	Adults	Total	<18 years	Adults	Total	
1970	18,322	55,935	74,257	17,482	55,974	73,456	147,713
1971	15,794	44,650	60,444	14,951	46,505	61,456	121,900

5.64 Marital status of immigrant arrivals, by sex and age group, 1971

Sex and age group	Single	Married	Widowed	Divorced	Separated	Total
Male						
0-14 years	13,752	—	—	—	—	13,752
15-19 "	3,914	74	—	—	—	3,988
20-24 "	8,652	2,817	2	30	16	11,517
25-29 "	6,282	6,103	4	122	51	12,562
30-39 "	2,409	8,227	22	230	99	10,987
40-49 "	286	3,224	27	111	40	3,688
50-59 "	70	1,434	54	43	18	1,619
60 years or over	61	1,768	436	43	24	2,332
Total, male	35,426	23,647	545	579	248	60,445
Female						
0-14 years	12,747	9	—	—	—	12,756
15-19 "	3,845	1,365	—	1	1	5,212
20-24 "	7,173	6,941	10	49	30	14,203
25-29 "	3,858	6,677	31	142	60	10,768
30-39 "	1,830	6,451	66	248	82	8,677
40-49 "	342	2,569	253	188	66	3,418
50-59 "	135	1,512	799	114	62	2,622
60 years or over	246	1,236	2,122	120	75	3,799
Total, female	30,176	26,760	3,281	862	376	61,455

5.65 Intended occupations of male and female immigrants, 1971

Intended occupation	Male	Female	Intended occupation	Male	Female
WORKERS					
Managerial (owners, managers, officials)	3,150	314	Teachers		
Professional and technical	11,398	4,909	Professors, principals	1,170	188
Professional engineers			School teachers	1,153	1,122
Civil	284	5	Other instructors	104	100
Mechanical	343	4	Health professionals		
Industrial	327	20	Physicians, surgeons	843	144
Electrical	369	2	Dentists	51	4
Mining	102	1	Nurses, graduate	26	963
Chemical	130	9	Nurses-in-training	56	109
Other	90	1	Pharmacists	44	27
Physical scientists			Medical and dental technicians	350	399
Chemists	238	34	Other	44	269
Geologists	219	6	Law professionals	41	6
Physicists	113	5	Religion professionals	334	22
Other	18	2	Artists, writers and musicians		
Biologists and agricultural professionals			Commercial artists	105	35
Biological scientists	190	61	Art teachers	65	53
Veterinarians	50	3	Authors, editors, journalists	191	73
Other	139	16	Musicians, music teachers	224	100

5.65 Intended occupations of male and female immigrants, 1971 (concluded)

Intended occupation	Male	Female	Intended occupation	Male	Female
WORKERS (concluded)			Loggers and related workers	65	—
Other professionals			Fishermen, hunters, trappers	22	—
Architects	99	12	Miners, well drillers	237	—
Draughtsmen	660	70	Construction trades	3,997	8
Surveyors	120	—	Carpenters	1,017	1
Actuaries, statisticians	268	74	Plumbers	336	1
Economists	213	37	Electricians	765	2
Computer programmers	19	4	Painters, glaziers	340	1
Accountants, auditors	350	32	Bricklayers, stonemasons	675	—
Dietitians	8	38	Cement and concrete workers	86	—
Social workers	173	208	Plasterers, lathers	57	—
Librarians	42	97	Sheet metal workers	130	1
Interior decorators	54	27	Other (excl. labourers)	591	2
Photographers	118	14	Manufacturing and mechanical trades	9,360	2,801
Science technicians	1,285	217	Food workers	460	14
Other	576	296	Rubber workers	17	1
Clerical	2,902	7,007	Leather workers	129	7
Bookkeepers, cashiers	562	761	Textile workers	113	70
Storekeepers, shipping clerks	279	25	Tailors, furriers	630	2,442
Stenographers, typists	92	3,981	Woodworkers, sawyers	492	6
Other	1,969	2,240	Paper and chemical workers	36	—
Transportation trades	597	2	Printers, bookbinders	253	29
Aircraft operators	49	1	Furnacemen, moulders	131	1
Railway operators	10	—	Jewellers, watchmakers	130	14
Water transport	109	—	Machinists	2,641	70
Road transport	420	1	Mechanics, repairmen	3,028	5
Other	9	—	Electrical, electronic workers	551	40
Communication trades	76	65	Painters (excl. construction)	99	3
Commercial sales	1,557	550	Clay, glass, stone workers	65	11
Auctioneers, canvassers	10	2	Stationary enginemn	171	1
Pedlars, commercial travellers	402	33	Freight handlers	26	—
Sales clerks, salesmen	1,143	511	Other	388	87
Other	2	4	Labourers	1,298	26
Financial sales	362	17	Not stated and unknown	1,030	985
Service and recreation	2,556	3,831	Total, workers	40,706	20,576
Protective service	105	2	NON-WORKERS		
Cooks	948	120	Wives	—	21,333
Domestic servants	270	2,393	Children	15,417	14,267
Nurses' aides	128	374	Other	4,322	5,279
Waiters, porters	560	271	Total, non-workers	19,739	40,879
Athletes, entertainers	147	71	Total, immigrants	60,445	61,455
Other	398	600			
Farmers	2,099	61			

5.66 Deportations¹ of immigrants, by cause and nationality, 1970 and 1971

Cause	1970	1971	Nationality	1970	1971
Mental and physical	92	87	British	109	141
Public charges	13	24	United States	1,140	1,997
Criminality	763	1,394	Other	1,255	1,889
Misrepresentation ² and stealth	1,477	2,290	Total, deportations	2,504	4,027
Other	159	232			

¹ Excludes rejections and persons refused admission.² Includes deserting seamen deported.5.67 Canadian-born persons entering the United States from Canada and elsewhere, and total persons entering the United States from Canada, years ended June 30, 1962-71¹

Year	Entering US from Canada Canadian-born	Total	Canadian-born entering US from elsewhere	Year	Entering US from Canada Canadian-born	Total	Canadian-born entering US from elsewhere
1962	29,569	44,272	808	1967	22,729	34,768	713
1963	35,320	50,509	683	1968	27,189	41,716	473
1964	37,351	51,114	723	1969	18,196	29,303	386
1965	37,519	50,035	808	1970	13,466	26,850	338
1966	27,707	37,273	651	1971	12,847	22,709	281

¹ Includes only persons who have declared their intention of remaining permanently in the US when applying for a visa.

Sources

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5.22 Statistics Division, Department of Indian Affairs and Northern Development.

5.23 - 5.30 Population and Housing Subdivision, Census Branch, Statistics Canada.

5.31 - 5.58 Health and Welfare Division, Institutional and Public Finance Branch, Statistics Canada.

5.59 - 5.66 Canadian Immigration Division, Department of Manpower and Immigration.

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Chapter 6

Health and welfare

6.1 Federal health organization and activities

Under the British North America Act responsibility for administration of health services is the direct concern of provincial governments, with municipalities often exercising considerable influence over matters delegated to them by provincial legislatures. Although patterns of health services in different provinces are similar, their organization, system of financing and administration vary from province to province.

On the national level, the Department of National Health and Welfare is the chief federal agency in health matters. In conjunction with other federal agencies and with provincial and local health agencies it works to raise the health level of all Canadians. The health side of the Department, under the Deputy Minister of National Health, is organized into three branches: Health Protection, Health Programs and Medical Services. In addition, there is a Long-Range Health Planning Group, and the separate Medical Research Council.

The Health Protection Branch provides services to protect the Canadian public from environmental health hazards of all types. It is composed of seven organizational units: Food, Drugs, Environmental Health, Non-medical Use of Drugs, Laboratory Centre for Disease Control, Field Operations and Administration Services. A central Epidemiology Service serves all health branches of the Department.

The Health Programs Branch administers federal aspects of Canada's two major health programs, hospital and medical insurance. This Branch is made up of the following units: Program Development and Evaluation, Hospital Insurance and Diagnostic Services, Medical Care, Research Programs, Health Economics and Statistics, Health Manpower, Health Facilities Design, Health Systems, Health Standards, Task Force on Community Health, and Program Finance and Administration.

The Medical Services Branch has direct responsibility for the health care and public health services of Indians and Eskimos and of all residents of the Yukon and Northwest Territories, as well as for quarantine and immigration medical services, public service health, a national prosthetics service, and civil aviation medicine.

Other federal agencies carry out specialized health functions; for example, Statistics Canada is responsible for gathering vital and other health statistics, the Department of Veterans Affairs administers hospitals and health services for war veterans, and the Canada Department of Agriculture has certain responsibilities connected with health aspects of food production.

6.1.1 Health care

6.1.1.1 Public medical care

The Medical Care Act was passed by Parliament in December 1966 and the medical care program began to operate on July 1, 1968. As of April 1, 1972 all provinces and territories had entered the federal program. Under the Act the federal government contributes to any one participating province one half of the per capita cost of all insured services furnished under the plans of all participating provinces, multiplied by the number of insured persons in that one province. The minimum criteria to be met are described in the following paragraphs.

Comprehensive coverage must be provided for all medically required services rendered by a physician or surgeon. There can be no dollar limit or exclusion except on the ground that the service was not medically required. The federal program includes not only those services that have been traditionally covered as benefits to a greater or lesser extent by the health insurance industry, but also those preventive and curative services that have been traditionally covered through the public sector in each province such as medical care of patients in mental and tuberculosis hospitals and services of a preventive nature provided to individuals by physicians in public health agencies.

The plan must be universally available to all eligible residents on equal terms and conditions and cover at least 95% of the total eligible provincial population. This "uniform terms and conditions" clause is intended to ensure that all residents have access to coverage and to prevent discrimination in premiums on account of previous health, age,

non-membership in a group, or other considerations. If a premium system of financing is selected, subsidization in whole or in part for low-income groups is permitted. It has been left to the individual province to determine whether its residents should be insured on a voluntary or compulsory basis. Utilization charges at the time of service are not precluded by the federal legislation if they do not impede, either by their amount or by the manner of their application, reasonable access to necessary medical care, particularly for low-income groups. The plan must provide portability of benefit coverage when the insured resident who has paid his premiums, if any, is temporarily absent from the province and when moving residence to another participating province. The provincial medical care insurance plan must be administered on a non-profit basis by a public authority that is accountable to the provincial government for its financial transactions. Provinces may assign certain administrative functions to private agencies.

These criteria leave substantial flexibility with each province to determine its own administrative arrangements for the operation of its medical care insurance plan and to choose the way in which it will be financed, i.e., through premiums, sales tax, other provincial revenues, or by a combination of methods. Federal contributions to the provinces under this program totalled \$589 million in the fiscal year 1971-72.

Provincial programs providing health care services (apart from those already insured under the Medical Care Act) for welfare recipients establishing eligibility on the basis of financial need are supported financially by the federal program known as the Canada Assistance Plan. This program provides for federal payment of one half of the cost of personal health care services, as well as welfare services. The provinces are free to make available a wide range of health care benefits.

6.1.1.2 Hospital insurance

Provincial hospital insurance programs, operating in all provinces and territories since 1961, cover 99% of the population of Canada. Under the Hospital Insurance and Diagnostic Services Act of 1957, the federal government shares with the provinces the cost of providing specified hospital services to patients insured by these programs. Specifically excluded are tuberculosis hospitals and sanatoria, hospitals or institutions for the mentally ill, and institutions providing custodial care, such as nursing homes and homes for the aged. The methods of administering and financing the program in each province and the provision of services above the stipulated minimum required by the Act are left to the province.

Insured in-patient services must include accommodation, meals, necessary nursing service, diagnostic procedures, pharmaceuticals, the use of operating rooms, case rooms, anaesthesia facilities, and the use of radiotherapy and physiotherapy if available. Similar out-patient services may be included in provincial plans and authorized for contribution under the Act. All provinces include some out-patient services, and most cover a fairly comprehensive range. The Government of Canada contributes to each province out of the Consolidated Revenue Fund, the sum of 25% of the per capita cost of in-patient services in Canada and 25% of the per capita cost of in-patient services in the province, multiplied by the average number of insured persons in that province. Thus, the total contribution is about 50% of the sharable cost for all Canada, but the proportion of federal support is higher in provinces where the per capita cost is below the national average and lower in the other provinces. Contributions for insured out-patient services in each province are paid in the same proportion as the contributions to the cost for in-patients.

Under the Established Programs (Interim Arrangements) Act, a province may contract out of various federal-provincial programs, including hospital insurance, and on January 1, 1965, Quebec did so. Accordingly the federal contribution to the Quebec hospital insurance program is made through tax abatement and not under the Hospital Insurance Act. Federal payments to the provinces (including Quebec) under this program for the fiscal year 1971-72 amounted to \$1,187 million.

6.1.1.3 Health manpower and resources

The Health Manpower Program of the Department of National Health and Welfare is designed to promote the development of health facilities and to support health resources studies into all aspects of the supply of health manpower. The federal Health Resources Fund Act of 1966 provided for the establishment of a fund of \$500 million to be applied to the costs between 1966 and 1980 of providing facilities for research and for training health professionals. Payments from the fund may cover up to 50% of the costs of functional planning,

constructing, renovating, acquiring and equipping facilities for education and research in health. As at March 31, 1972, \$255 million had been approved for payment to the provinces, of which \$180 million had been expended. About four fifths of this sum was for training facilities and one fifth for research establishments.

6.1.1.4 Health services for specific groups

Through its Medical Services Branch, the Department of National Health and Welfare provides or arranges for several types of medical and health service for persons whose care is by custom or legislation a federal responsibility.

Indian health services. Indians, as residents of a province, are entitled to the benefits of medical care and hospital insurance. These insured benefits are supplemented by Medical Services, which assists Indian bands in arranging for transportation and in obtaining drugs and prostheses. Emphasis is placed on a comprehensive public health program which provides dental care for children, immunization, school health services, health education, and prenatal, postnatal and well-baby clinics. Through direct financial assistance to organizations of native peoples, support is given to Indian programs directed toward improving the quality of life by means of adult education, family planning, accident prevention, venereal disease control programs, and the suppression of alcoholism and drug abuse. Since Indians comprise just over 1% of the Canadian population and are distributed widely throughout Canada, a network of specially designed health facilities has been constructed in almost 200 communities that would otherwise lack health facilities. Approximately 60 of these are nursing stations, 91 are health centres, 46 are out-patient clinics, and nine are hospitals.

Increasing numbers of Indians are being trained and employed in the public health and medical care programs to facilitate understanding and health activities in local communities.

Northern health services. The Department provides health services to all residents of the Yukon Territory and Northwest Territories. The services comprise all normal health department activities including a comprehensive public health program; special arrangements facilitate inter-station communication and the transportation of patients from isolated communities to medical centres. Several university groups have interests in delineated zones for the provision of medical personnel and students in rotation; their activities are supported financially through government contracts and medical care insurance. Departmental facilities include four hospitals, six clinics, 40 nursing stations, and 15 health stations. Both territories now have tax-supported hospital and medical care insurance programs.

Quarantine and regulatory service. Under the Quarantine Act, all vessels, aircraft, and other conveyances and their crews and passengers arriving in Canada from foreign countries are subject to inspection by quarantine officers to detect and correct conditions that could lead to the entry into Canada of such diseases as smallpox, cholera, plague, and yellow fever. Fully organized quarantine stations are located at all major seaports and airports. The Branch is responsible for enforcing standards of hygiene on federal property including ports and terminals, interprovincial means of transport, and Canadian ships and aircraft.

Immigration medical services. Under the Department of National Health and Welfare Act and the Immigration Act, the Medical Services Branch determines in Canada and other countries the health status of all applicants for immigration to Canada and some non-immigrants, and provides treatment for certain classes of persons after arrival in Canada, including immigrants who become ill en route to their destination or while seeking employment.

Public service health. The Medical Services Branch is responsible for a comprehensive occupational health program for federal employees throughout the country and abroad. This service includes health counselling, surveillance of the occupational and working environment, pre-employment, periodic and special examinations, first aid and emergency treatment, and a wide range of advisory services and special health programs.

Civil aviation medicine. The Department provides an advisory service to the Ministry of Transport concerning the health and safety of all those involved in Canadian civil aviation. Regional and headquarters aviation medical officers review all medical examinations, participate in aviation safety programs, and assist in air accident investigations. Close liaison with authorities responsible for foreign aviation medicine is maintained as standards are usually based upon international agreements.

Prosthetic services. The over-all objective of Prosthetic Services is to offer prosthetic and orthotic rehabilitation services to the amputee population and to other physically handicapped persons as provided for in agreements in effect with the provinces and with the Department of Veterans Affairs.

Unemployment insurance disability assessment. A number of Medical Services physicians provide an assessment and advisory service to the Unemployment Insurance Commission in relation to claims for benefits under the new Sickness and Maternity Benefit Plan which came into effect on July 1, 1971.

Emergency health services. The objective of this activity is to prepare plans to ensure that the health component of the Department is able to continue operating in the event or threat of nuclear attack, and to advise, assist and stimulate provincial and municipal health departments in emergency health planning.

6.1.2 Health protection

Through the Health Protection Branch the Department is responsible for protecting the Canadian public from possible risks to health from foods, drugs, cosmetics, medical devices and hazardous products sold on the market. Under the Food and Drug Act, standards of safety and purity in foods are developed through laboratory research and maintained by means of regular and widespread inspection programs. The Branch is also responsible for enforcing food and drug regulations which prescribe maximum concentrations of additives in specified foods. Every drug manufacturer is required by law to submit information to the Health Protection Branch on all products he intends to market in Canada. Decisions are based on this and other information regarding the type of control to be exercised.

6.1.2.1 Food

Standards of safety and purity are developed through laboratory research and maintained by means of a regular and widespread inspection program. The inspection of food-manufacturing establishments plays a major role in the production of clean, wholesome foods containing ingredients that meet recognized standards. Changing food technology requires the development of methods of laboratory analysis to ensure the safety of new types of ingredients and packaging materials. The Food and Drug Regulations list chemical additives that may be used in foods, the amounts that may be added to each food, and the underlying reason. Information on new additives must be submitted for careful review before they are included in the permitted list. Considerable emphasis is placed upon studies to ensure that the levels of pesticide residues in foods do not constitute a health hazard. The effect of new packaging and processing techniques on the bacteria associated with food spoilage is also of special concern.

6.1.2.2 Drugs

The Health Protection Branch regulates both the manufacture and distribution of drugs in Canada. The conditions under which drugs are to be manufactured are described in the Manufacturing Facilities and Control Regulations. They relate to facilities, employment of qualified personnel, quality control procedures, maintenance of records, and a suitable system to enable a complete and rapid recall of any batch of drugs from the market. Pharmaceutical plants are regularly visited by inspectors to ensure that the drugs produced meet the quality standards required for sale in Canada.

When a new drug with unknown properties is to be placed on the market, the manufacturer is required by law to provide specified information, including a quantitative list of all ingredients, evidence of clinical effectiveness, the formulation of dosage forms and reports of any adverse effects. This information is studied carefully to ensure that the drug is safe and effective for the purposes claimed. Even after a new drug is on the market, its sale can be banned by the Health Protection Branch if the Adverse Drug-Reaction Program indicates that the drug is unsafe and injurious to the health of the Canadian people. More recently, the Branch announced the establishment of a comprehensive Drug Quality Assurance Program aimed at producing objective evidence on the quality of drugs already on the Canadian market and disseminating it to members of the health professions, governments and the general public. Plants manufacturing biologicals such as serums and vaccines must also be licensed according to specifications of the Health Protection Branch, whether they are located in Canada or abroad.

Another major activity of the Branch is to enable the public to purchase high quality drugs

at the cheapest price. This program includes integrated action involving inspection of manufacturing facilities, assessing of claims and clinical equivalency of competing brands, and providing information to professionals concerned and to the general public.

6.1.2.3 Non-medical use of drugs

The objectives of the non-medical use of drugs program of the Branch may be described under four main headings: prevention, to develop and stimulate programs intended to prevent mind-altering drugs being used in ways that may result in physical, mental, and social health problems; treatment, to stimulate the development of effective means of dealing with the immediate physical and mental problems caused by the use of mind-altering drugs; rehabilitation, to stimulate the development of effective means of restoring casualties of mind-altering drugs to health; and education, to develop and promote information and education programs aimed at preventing drug abuse and at persuading smokers to stop and young persons not to start.

6.1.2.4 Environmental health

The Environmental Health Directorate of the Branch has recently become responsible for administering the Radiation Emitting Devices Act which regulates the manufacture and distribution of devices emitting high-frequency electromagnetic or ultrasonic waves. Other activities include investigation of potential future environmental hazards and support of research to gain the knowledge necessary to control air and water pollutants including noise and certain mineral elements.

6.1.2.5 Disease control

In the area of communicable disease control the Branch laboratories are involved in the development and implementation of preventive, diagnostic, quality control, and other measures directed to combat communicable disease agents. Other activities entail developing methods for detecting and preventing disease, producing and distributing standardized diagnostic agents to federal, provincial, and other health organizations, and providing a national reference service for identification of disease-producing bacteria, viruses, and parasites. Through the Epidemiology Division, the Branch assists in control of infectious and other diseases by disease surveillance, epidemiological studies and by providing assistance in epidemics.

6.1.3 Research, planning and consultative services

6.1.3.1 Medical research

Federal government expenditures for health science research in 1971-72 were estimated at \$63.1 million, an increase over the \$54.8 million recorded in 1970-71. The expenditures are accounted for by the Medical Research Council, \$35.6 million, the Department of National Health and Welfare, \$27.2 million, and the Department of Veterans Affairs, \$300,000.

Most federal grants supporting health science research in universities and hospitals are channelled through the Medical Research Council which reports to Parliament through the Minister of National Health and Welfare. The Council spent \$35.6 million in 1971-72, of which \$23.6 million was allocated for grants-in-aid, \$8.6 million for research scholarships and fellowships, and \$3.4 million for other research support and promotion. Dental and pharmaceutical research as well as medical research are included.

The Department of National Health and Welfare in 1971-72 distributed \$7.7 million under the Public Health Research Grant and the National Health Grant for applied and developmental research projects and related scientific activities conducted by universities, hospitals, health departments, and other non-profit health organizations. In addition, the Department paid \$66,000 for physiological research under the Fitness and Amateur Sport Grant, \$61,000 for food and drug research, and \$228,000 for research into the non-medical use of drugs. The expansion of research facilities continues to be one of the key objectives of the Health Resources Program; it is estimated that \$12.3 million, about 33% of the Health Resources Fund expenditures in 1971-72, was used to build research facilities.

The Department accounts for most of the intramural expenditures; \$6.7 million was spent on research and development studies and related scientific activities in health fields. Major subjects of research were pharmacology, pharmaceutical chemistry, nutrition, microbiology, pesticides, food additives, clinical laboratory procedures, health services, prosthetics, epidemiology, and physical fitness.

The Department of Veterans Affairs supports a variety of clinical studies in chronic disease problems including psychiatric research; total expenditures reached \$322,000 in 1971-72. Studies in radiation biology and other life sciences important to health are conducted by the National Research Council and are discussed in more detail in Chapter 9.

The principal voluntary agencies supporting medical research in Canada related to their special interests are: the National Cancer Institute, Canadian Arthritis and Rheumatism Society, Canadian Cystic Fibrosis Foundation, Canadian Association for the Mentally Retarded, Canadian Mental Health Association, Muscular Dystrophy Association of Canada, and Multiple Sclerosis Society of Canada.

Research is also funded by provincial governments through various councils and foundations as well as direct research grants. The Interdepartmental Committee on Medical Research, to which the voluntary agencies are invited, provides a forum for the sharing of information and support of medical research.

The Medical Research Council (MRC) is the main channel through which the federal government provides financial support for research in the health sciences initiated and carried out in Canadian schools of medicine, pharmacy and dentistry. It had existed in various administrative forms within the framework of the National Research Council since 1938 but in 1969, with the passage of the Government Organization Act, it became a departmental Crown corporation in its own right. It reports to Parliament through the Minister of National Health and Welfare but is completely separate from the Department. The Council itself is made up of a full-time president appointed by the Governor in Council, a vice-president and 20 members, drawn chiefly from the universities, who serve without remuneration for terms of up to three years. The program is administered by a small full-time secretariat of scientific and administrative personnel.

Under the terms of its legislation, the MRC has authority "to promote, assist and undertake research in the health sciences, with the exception of public health research". The latter, by statute, is the responsibility of the federal Department of National Health and Welfare. Its program is divided into three main sectors: grants, awards, and research development.

The Grants Program is by far the largest component of the MRC operation. Applications from investigators on the staff of Canadian universities and affiliated institutions are considered on three occasions each year. The basis for this consideration is peer assessment; each application is reviewed by external referees expert in the field involved and then considered by one of 17 grants committees, each composed of eight to ten senior investigators drawn from universities, government and industry. The recommendations of these committees are then forwarded to the Council and awards are approved to the extent that funds permit. Most are made on an annual basis but, where a research program of high merit has reached a stable level of expenditure, support in a specified annual amount may be provided for terms of three to five years. The grants are designed to provide for the normal operating costs of approved programs and for items of special research equipment; they may not be used for the remuneration of the investigator to whom the award is made.

The Awards Program provides support for research personnel in several categories. There are opportunities for research training of graduates of high calibre at the post-doctoral level through Fellowship and Centennial Fellowship programs and at the pre-doctoral level through a program of Studentships. These awards are all prize awards and the number of successful candidates is therefore limited. Many other research trainees, however, receive support through the operating grants to investigators who supervise their training. The MRC Associateship program provides continuing salary support for a limited number of highly qualified independent researchers working in universities and devoting at least 75% of their time to research and graduate teaching. The MRC Scholarship provides young investigators who have completed their formal research training with an opportunity to demonstrate in a university setting their potential for independent research without the necessity of, at the same time, carrying a heavy undergraduate teaching load; these awards are tenable for up to five years. Provision is also made for the exchange of information among Canadian scientists through the Visiting Professorship Program, and among Canadian scientists and their foreign colleagues by means of the Visiting Scientist Program under which Canadian investigators may spend up to one research year abroad or foreign scientists may spend periods of three to 12 months working in Canadian laboratories.

A significant portion of the MRC's developmental funds is used to assist in the correction of disparity, both regional and disciplinary, in Canada's research effort; universities attempting to build up programs in underdeveloped fields are encouraged to apply for Development Grants in a special program designed to assist the Deans of health science faculties in the recruitment of new staff by giving assurance of research funds and equipment, and, if necessary, of salary support for limited periods. A special Group Program has been developed to provide research support to groups of two or more accomplished investigators who wish to engage in collaborative work in what appear to be especially productive areas. Investigators comprising MRC Groups are expected to devote virtually all their efforts to their common research objectives, and receive from the MRC what is essentially full support of their research program. There are now six MRC Groups — the Group in Neurosciences at the University of Montreal, the Group in Transplant Research at the University of Alberta, the Group in Developmental Neurobiology at McMaster University, the Group in Drug Toxicology at the University of Montreal, the Group for Hypertension at the *Institut de Recherches cliniques de Montréal*, and the Group in Medical Genetics at McGill University. Under the heading of Research Development, the MRC also provides financial support for scientific symposia and workshops held in Canada, and assists in defraying the operating costs of the Canadian Council on Animal Care.

6.1.3.2 National Health Grant

The National Health Grant was established in April 1969 to stimulate research studies, service demonstrations, and training activities of national significance for the improvement of health services. Contributions from this grant may be made to provincial or municipal governments and to any agency, association, corporation, institution or individual capable of conducting activities in the health field. Awards to date have been mainly in support of training of research personnel in the health care field and for research projects related to analysis of quality of health care and health care delivery. Contributions made from this fund exceeded \$3 million in the fiscal year 1971-72.

In November 1972, the National Health Grant was extended to include the Public Health Research Grant (\$4.5 million in the fiscal year 1971-72) which had previously allocated funds for research in disease prevention, epidemiology, health promotion, and environmental health. The amalgamation was expected to permit a more unified approach to development priorities, as well as to ease certain administrative problems. The grants are administered by the Research Programs Directorate of the Health Programs Branch.

6.1.3.3 Health economics and statistics

The Health Economics and Statistics Directorate in the Health Programs Branch provides socio-economic research and advisory services in a variety of fields including medical care, hospital care, community health services, health expenditure, manpower resources, and other matters relating to health costs and utilization. The directorate also serves as a national centre for socio-economic research in the health field to produce research reports and publications designed to increase public understanding of the organization, cost and performance of Canada's health services and resources.

6.1.3.4 Long range health planning

The long range health planning group is concerned with identifying and assessing major issues and trends in the health field which have either not yet clearly emerged or on which no consensus has yet been reached. In a sense the Branch tries to bring into focus the unstable or unpredictable elements of the health field so that they can be considered by policy makers. By comparison the operating Branches tend to plan more in the implementational and operational elements.

Specialists in the long range health planning group are available in the following fields: policy review, medicine, lifestyle health problems, medical sociology, health status indicators, health care organization, quantitative methods and pharmaceutical economics.

6.1.3.5 Consultative and technical services

The Department of National Health and Welfare extends technical advisory services to provincial agencies, universities and other organizations for the development of health programs, health manpower, and health research. Consultative services are available through

the various administrative units of the Department responsible for federal-provincial health care programs such as hospital insurance, medical care insurance and health grant programs that have a service, demonstration, research, or educational objective: the Non-medical Use of Drugs Program, the Family Planning Grant, the National Health Grant (now including the Public Health Research Grant), and the grants for health manpower development. Consultants are engaged in health facilities design and in most areas of community health including mental health and health education. Other technical advice is available through programs directly operated by the Department for health protection including the safety of foods, drugs and health appliances, environmental health, the Laboratory Centre for Disease Control and other specialized areas.

6.1.4 International health

Canada actively assists and co-operates with the World Health Organization (WHO) and the other specialized agencies of the United Nations whose programs have a substantial health component or orientation. Capital and technical assistance are provided to developing countries through the Colombo Plan and other bilateral aid programs. Health training is provided for a number of persons coming to Canada each year under various technical assistance schemes and in co-operation with the PAHO/WHO Fellowships Programs.

Canadian experts in health legislation, health administration, environmental health, nursing, and related areas undertook specific assignments abroad during the year and teachers and specialists in a number of clinical fields were provided in response to requests from developing countries. Capital assistance under the Canadian International Development Agency program, primarily through the provision of cobalt-60 beam therapy units for cancer treatment centres in the Colombo Plan and Caribbean areas, was continued. As a result of a visit to Viet-Nam in 1967, recommendations of the Advisory Team on the Viet-Nam Medical Program regarding tuberculosis, rehabilitation, immunization, hospital equipment and other programs have been implemented; the tuberculosis program was again reviewed during visits by an expert in 1970 and succeeding years. Canadian participation in this project was phased out during 1972. Projects for training in public health are in development in Viet-Nam and in Cameroon.

The Department is responsible for the enforcement of regulations governing the handling and shipping of shellfish under the International Shellfish Agreement between Canada and the United States. Other responsibilities include the custody and distribution of biological, vitamin, and hormone standards for WHO and certain duties in connection with the Single Convention on Narcotic Drugs, 1961, as well as Canada's representation on the Narcotic Commission of the United Nations.

6.2 Provincial and local health services

Provincial governments administer medical and hospital insurance programs, and are primarily responsible for health measures to prevent disease and improve the health standards of the community. These include preventive health services, hospital services, treatment services for tuberculosis, mental illness and other diseases, and rehabilitation and care of the chronically ill and disabled. Most health functions are administered from within provincial health departments, but in some provinces certain programs such as hospital insurance, medical care insurance, tuberculosis control, cancer control, and alcoholism and drug addiction programs are directed by separate public agencies directly accountable to the Minister of Health. Voluntary organizations also provide specialized health services.

Local programs to safeguard community health are concerned with environmental sanitation to ensure safe water, milk and other foods, prevention and control of infectious diseases through use of vaccines and prophylactics, improvement of maternal and child health, family planning, dental health, registration of vital statistics, and health education and counselling. In addition, the larger city health departments and health units have developed specialized services in such areas as mental health, home care and rehabilitation of the chronically ill and the handicapped. A few health units and departments in most provinces carry out health screening for chronic conditions. Local health services also participate with provincial authorities in accident prevention programs and in measures to control pollution of the air, water and soil.

6.2.1 Public health services

6.2.1.1 Occupational health

Services designed to prevent accidents and occupational diseases and to maintain the health of employees are the common concern of provincial health departments, labour departments, workmen's compensation boards and industrial management. Provincial agencies regulate working conditions and offer consultant and educational services to industry. All provinces have legislation (factory Acts, shop Acts, mines Acts, workmen's compensation Acts) setting standards for health safety and accident prevention on the job. Most provinces maintain environmental health laboratories that study industrial health problems such as the effects of noise and air conditions on workers.

6.2.1.2 Communicable disease control

The larger provincial health departments have separate divisions of communicable disease control headed by full-time epidemiologists; in others, this function is combined with one or more community health services. Local health authorities organize public clinics for immunization against diphtheria, tetanus, poliomyelitis, whooping cough, smallpox and measles. They also engage in case-finding and diagnostic services in co-operation with public health laboratories and private physicians. Special services for tuberculosis and venereal disease are described in Sections 6.2.3.1 and 6.2.3.3.

6.2.1.3 Health education

Most provincial health departments have a division or unit of health education under a full-time professional "health educator" to promote public knowledge of health needs and measures. These divisions provide educational materials to other divisions of the health department, local health authorities, schools, voluntary associations, and to the public. Many educational activities are directed to accident prevention and to changing habits harmful to health, such as cigarette smoking and the excessive use of alcohol and other drugs. All health workers carry out health education as part of their normal activities.

6.2.1.4 Public health laboratories

All provinces maintain a central public health laboratory and most have branch laboratories to assist local health agencies and the medical profession in the protection of community health and the control of infectious diseases. Public health bacteriology (testing of milk, water and food), diagnostic bacteriology, and pathology are the principal functions of the laboratory service, with medical testing for physicians and hospitals steadily increasing in volume.

6.2.1.5 Maternal and child health

Public health nurses employed by local health services carry out programs of preventive health care to mothers, the newborn and children through clinics, home and hospital visits and school health services. All provincial health departments have established maternal and child health consultant services to co-operate with the public health nursing services. The maternal and child health services also undertake studies in maternal and child care, including hospital care, and assist in the training of nursing personnel.

6.2.1.6 Nutrition

Provincial health departments and some city health departments employ consultants in nutrition to extend technical guidance and education to health and welfare agencies, nursing homes and other care institutions and hospitals. They also provide diet counselling to selected patient groups such as diabetics, and conduct nutritional surveys and other research.

6.2.1.7 Dental health

Public dental health programs at the provincial level have been largely preventive, but increasing emphasis is now being given to dental care. Dental clinics conducted by local health services are generally restricted to pre-school and younger school-age groups. A number of provinces send dental teams to remote areas and subsidize resident dentists to practise in areas lacking such services, while the four western provinces have dental care schemes of varying coverage for welfare recipients. Other dental health programs are directed to the training of dentists and dental hygienists, conducting dental surveys, and the extension of water fluoridation.

6.2.2 Mental health services

Mental health services in Canada are organized as part of provincial health services. As public health officers, mental health directors and their associates are responsible for the development of programs aimed at prevention of mental disease and for the general promotion of mental health, on their own and in co-operation with welfare, education, manpower, labour and justice departments. As psychiatric specialists, they are responsible for the over-all development and supervision of the various medical facilities for the treatment of people who suffer from mental or emotional disorders including disorders of character and behaviour, the mentally retarded, people with damage to the nervous system, alcoholics and drug addicts.

The continuing efforts by provincial health departments to provide more and better mental health services reflect growing enlightenment about mental health on the part of the medical profession, the general public and government agencies. Improvement in the care of psychiatric patients has been fostered by activities of voluntary organizations such as the Canadian Mental Health Association and the Canadian Association for the Mentally Retarded; by the professional advice of the Canadian Medical Association and the Canadian Psychiatric Association; by the national health grants and the national welfare grants for new services, professional training and scientific research; and through the information programs of the federal Department of National Health and Welfare.

Extending mental health services into the community is intended to prevent severe mental and emotional breakdowns and to reduce the number of people requiring treatment in institutions. Under the terms of the federal-provincial medical care legislation and its provisions, the services of private psychiatrists have become more widely available. Through early diagnosis and treatment in a mental health clinic or out-patient department of a hospital, troubled persons may continue to live at home and pursue their normal occupations while receiving treatment. Special centres have been established for the study and treatment of alcoholism and drug addiction, criminal psychopathy, psychiatric disorders in children, brain injuries, mental retardation and genetic and neurological disorders.

6.2.3 Services for specific diseases or disabilities

6.2.3.1 Tuberculosis and respiratory diseases

Tuberculosis statistics reported by Statistics Canada for 1971 show little or no change from the 1970 figures: new active cases totalled 3,943, or 18.3 per 100,000 population, and reactivated cases numbered 622 or 2.9 per 100,000. In 1970, there were 527 deaths from tuberculosis or 24 per 100,000, compared with 526 deaths in 1969. Altogether, Canadians reported to be under treatment for tuberculosis in 1971 numbered 9,610, while an additional 11,504 susceptible persons received prophylactic drugs as a preventive measure. Further details on the incidence of tuberculosis will be found in Table 6.26.

Provincial health departments, assisted by voluntary agencies, conduct anti-tuberculosis case-finding programs through community tuberculin-testing and X-ray surveys, with special attention to high-risk groups, routine hospital admission X-rays and follow-up of arrested cases. However, practising physicians detect the greatest number of new cases.

BCG vaccine, estimated to be effective for 80% of those vaccinated, is used in most provinces to protect high-risk groups. Quebec and Newfoundland routinely immunize children and in the Yukon Territory, BCG is routinely administered to all newborn. Treatment, including hospital care, drugs and rehabilitation services, is free in all provinces. Chemotherapy has shortened hospital stay and facilitated out-patient or domiciliary care.

6.2.3.2 Cancer

As the second leading cause of death in Canada, cancer accounts for about one of every five deaths, most of them occurring in the middle and later years of life. The standardized death rate from cancer has been rising steadily, from 136.3 per 100,000 population in 1969 to 137.5 in 1970. The standardized death rate for females declined slightly, from 114.4 in 1969 to 114.2 in 1970 whereas the standardized rate for males increased from 157.6 in 1969 to 160.2 in 1970. Statistics on the incidence of new cancer cases will be found in Table 6.27.

Special provincial agencies for cancer control, usually in the health department or a separate cancer institute, carry out cancer detection and treatment, public education, professional training, and research in co-operation with local public health services, physicians

and the voluntary Canadian Cancer Society branches. Although the provisions are not uniform, cancer programs in all provinces provide a range of free diagnostic and treatment services to both out-patients and in-patients financed by the hospital insurance programs or the federal-provincial cancer control grants (the federal Cancer Control Grant lapsed in 1971-72). Hospital insurance benefits for cancer patients include diagnostic radiology, laboratory tests and radiotherapy. The cancer control programs in Saskatchewan and New Brunswick also pay for medical and surgical services; in most provinces these costs are covered under the public medical care insurance schemes.

6.2.3.3 Venereal diseases

Public health authorities estimate that the real incidence of venereal diseases may be three to four times the number of cases actually reported. The 1971 figure of 2,489 cases of syphilis or 11.5 per 100,000 population was slightly lower than for 1970. In contrast, the total figure for gonorrhea cases in 1971 was 34,405 or 158.7 per 100,000, a marked increase over the 147.6 rate for 1970, the highest since 1947. In 1971, one fifth of all gonorrhea cases were reported for the 15- to 19-year age group while 36.9% were aged 20-24 years. Factors affecting this rise in gonorrhea incidence are increasing sexual permissiveness combined with reliance on contraceptive methods that do not prevent the spread of infection.

The real impediments to control of venereal diseases are negative attitudes and behaviour patterns, sometimes the result of ignorance, that permit cases to go undiagnosed or untreated and contacts unlocated. Provincial health departments have expanded public VD clinics, which provide free diagnostic and treatment services at convenient hours. In some areas these departments pay private physicians to give free treatment to indigents. In addition, the provinces supply free drugs to physicians for treating private cases. Local departments of health or district health units carry out case-finding, follow-up of contacts, and health education programs, assisted by provincial directors of venereal disease control.

6.2.3.4 Alcoholism

In all provinces, health departments or other official agencies administer programs for the prevention and control of alcoholism, including public education and related studies. Conservative estimates place the number of Canadians currently requiring these services at 270,000, if a clinical definition of alcoholism is used. Available treatment services are mainly for out-patients but, with the increasing awareness of need, most provinces have expanded facilities for in-patient services. Other facilities operated by official and voluntary agencies include hostels and special farms or prison centres for chronic offenders with drinking problems. In several provinces, alcoholics are treated in detoxication units or wards rather than in jails. Provincial alcoholism agencies in Ontario, Quebec and Saskatchewan have broadened their programs to include other addictions, while British Columbia supports a separate narcotic addiction foundation. Because addictions are widely prevalent, street clinics, hospitals, mental health services and other public and voluntary health and social agencies are also involved in their diagnosis and treatment.

6.2.3.5 Other diseases or disabilities

Many services for persons with chronic disabilities, such as heart disease, arthritis, diabetes, visual and auditory impairments, and for paraplegics, have been initiated by voluntary agencies assisted by federal and provincial funds. Today, treatment for specific conditions is available at hospital out-patient clinics and in-patient or day centres, at separate clinics and rehabilitation centres, and under home care programs.

Medical rehabilitation services, which offer physical medicine, physiotherapy, occupational therapy, speech therapy and social services, carry out assessment and remedial treatment and training. Some facilities, especially rehabilitation centres, also provide vocational rehabilitation and special education services. Mainly established in teaching hospitals located in the larger urban centres, these services financed under the provincial hospital insurance programs at the end of 1970 numbered 36 hospital rehabilitation units, 15 separate in-patient rehabilitation centres (with a total of 945 beds) and five out-patient rehabilitation centres. In addition, there were two private hospitals for crippled children, about 20 out-patient rehabilitation centres for children supported by voluntary and provincial funds and five rehabilitation centres for injured workmen.

Most large general hospitals conduct out-patient clinics for various diseases and disabilities including arthritis and rheumatism, diabetes, glaucoma, speech and hearing defects, heart diseases, and orthopedic and neurological conditions.

Special schools or classes for various groups of handicapped children are, typically, operated by school boards whereas most of the 17 schools for the deaf and the six schools for the blind are residential schools operated by provincial governments. In 1971-72, there were 3,410 students enrolled in schools for the deaf and 682 in schools for the blind.

6.2.4 Provincial hospital insurance programs

Newfoundland, Saskatchewan, Alberta and British Columbia were operating hospital insurance plans prior to the proclamation of the Hospital Insurance and Diagnostic Services Act in 1957. These provinces and Manitoba entered federal-provincial agreements on July 1, 1958, the earliest possible date under the new Act. Prince Edward Island, Nova Scotia, New Brunswick and Ontario followed in 1959, the territories in 1960, and Quebec in 1961. Effective January 1, 1965, Quebec elected to accept cost-sharing tax abatements in lieu of hospital insurance payments under the Established Programs (Interim Arrangements) Act.

Plans are administered by provincial departments of health or social affairs in some provinces, and by separate commissions in others. In some provinces, hospital insurance and medical care insurance are combined under one administration.

Coverage is automatic or compulsory in most provinces for all residents; however, in Ontario some persons are eligible to remain outside the plan as noted below, while in Alberta a resident who elects to remain outside the medical care plan must also "opt out" of the hospitalization plan.

Provincial plans assure all approved available in-patient services at the standard ward level as indicated in the federal Act and agreements. In view of the federal requirement all provinces guaranteed to provide these services upon entering into agreements and there has been virtually no change in the range of services insured on an in-patient basis during the years since the Act took effect.

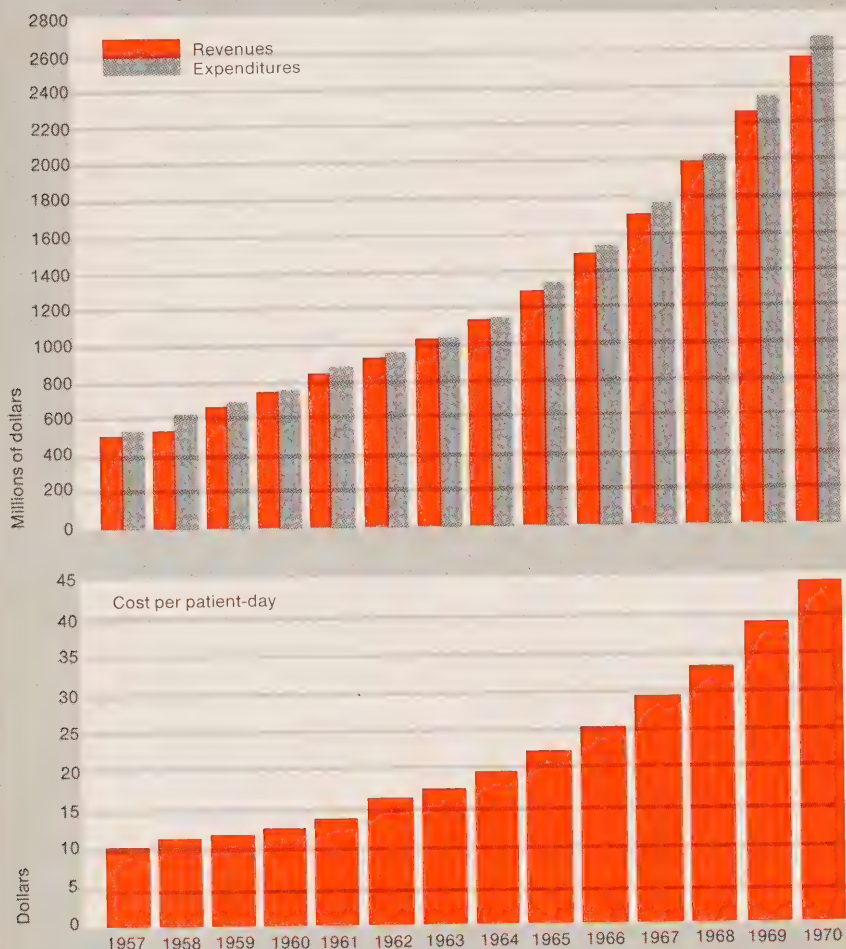
Out-patient services have remained an option of the province. In the initial years of operation under the Act many provincial plans provided only limited out-patient services; however, there has been a continuous improvement in coverage throughout the years and all provinces now provide a fairly comprehensive range of insured out-patient services.

All plans pay for insured in-patient services in other provinces of Canada at the rates prevailing in those provinces. Prior approval of the Commission is required by Nova Scotia and Prince Edward Island except for emergency care. Restrictions regarding rates and the volume of services are applied by most plans to in-patient services outside Canada. Payments for out-of-province out-patient services are more restricted; Nova Scotia and Quebec make no payments unless by special agreement in border areas; other provinces make payments subject to maximums for rates and volumes.

Some plans also insure services which are excluded under the federal Act and which are consequently not subject to cost sharing. These include coverage in psychiatric hospitals in Nova Scotia and Ontario. Ontario also provides essential ambulance services at a modest cost, care in tuberculosis sanatoria, care in nursing homes where medically necessary subject to a daily charge, and physiotherapy, occupational and speech therapy in non-hospital facilities. Alberta provides nursing home care and care in senior citizens lodges subject to appropriate charges, and physiotherapy services in non-hospital facilities.

Provinces finance their portion of the cost of hospital care through a variety of methods including general revenue, premiums, sales or property tax, authorized charges payable at the time of hospitalization, or various combinations of these sources. Newfoundland, Prince Edward Island, New Brunswick, Quebec, the Yukon Territory and the Northwest Territories finance their programs from general revenues. British Columbia and the Northwest Territories also levy authorized charges. Other provinces use general revenue to some extent to supplement other sources of revenue. Nova Scotia levies a provincial sales tax. Ontario charges a monthly premium of \$5.50 for single persons and \$11.00 for families. There is a compulsory payroll deduction in relation to establishments with 15 or more employees including the employer. With respect to other persons the program is available on a voluntary basis. In Manitoba the monthly premium for single persons is \$3.60 and for families \$7.20. A 6% charge on personal income tax and an extra 1% tax on the taxable income of corporations are levied to provide for costs not covered by premiums. In Saskatchewan the annual premium of hospitalization tax is \$24 for single persons and \$48 for families. In Alberta the joint premium charged for medical care and hospital insurance is \$5.75 per month for single persons and \$11.50 for families. These funds are augmented by authorized charges and a mill rate on property.

Revenues and expenditures of public hospitals¹ and cost per patient-day



1. General, allied special, mental and tuberculosis.

No premiums are payable in Ontario, Saskatchewan or Alberta by persons 65 years of age or over or in Manitoba by persons receiving the old age security pension plus the maximum guaranteed income supplement from the Government of Canada. Exemptions also apply to persons in receipt of provincial welfare assistance.

Alberta, British Columbia and the Northwest Territories levy authorized charges directly to patients for insured services. In Alberta in-patients of general hospitals are charged \$5.00 for the first day of care, while patients receiving auxiliary (chronic) hospital care are charged \$3 per day commencing with the 121st day of care. In British Columbia in-patients pay \$1 per day and in the Northwest Territories \$1.50. In British Columbia there is also a charge of \$1 for specified out-patient services. There are also charges in some provinces for those services which are additional to the provisions of the federal Act. For example, Ontario has a mileage charge for ambulance services and a daily charge for nursing home care. In Alberta there are charges for care in nursing homes and senior citizens lodges.

6.2.5 Provincial medical care programs

When the criteria stipulated under the Medical Care Act (Section 6.1.1.1) have been met by a province, the federal government contributes an annual sum equal to half the national per capita cost of insured services multiplied by the average number of insured persons in that province. Although co-insurance or deterrent charges are not favoured by the federal government, they are not ruled out by the federal Act, provided that they are not of such a size as would violate the principle of universality by denying services to low-income groups. Since the implementation of the Act, only one province, Saskatchewan, charged a deterrent fee, but this was abandoned in 1971.

As with hospital insurance, a variety of methods is used at the provincial level to finance its share of the cost. Combined hospital and medical premiums are charged in Ontario and Alberta, but are waived for those over 65, as they are in Saskatchewan. Premiums partially finance the plans of British Columbia, Saskatchewan, Manitoba and the Yukon Territory, the remainder of the cost being covered by general revenues. No medicare premiums are charged in New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and the Northwest Territories, where the plans are financed through general revenues. Quebec levies a special income tax surcharge and a similar levy on employers to finance its program.

Coverage for medical care benefits in Canada is approaching the 100% mark. The only exclusions are those covered under workmen's compensation legislation, or programs for the Armed Forces, the Royal Canadian Mounted Police, war pensioners and inmates of federal penitentiaries. In Saskatchewan, coverage is compulsory, but eligibility for benefits is linked to premium payments. Coverage by the combined plan in Ontario is on a compulsory basis for employee groups of more than 15 persons, but is voluntary for others. British Columbia's plan is totally voluntary. In other premium-paying plans (such as in Manitoba and the Yukon Territory) premium payment has been separated from entitlement to benefits. In non-premium provinces, all residents are insured. As with hospital insurance, the patient is allowed free choice of physician when he seeks treatment. Many provincial medical plans also provide additional benefits beyond those required by the national legislation, such as optometrical services.

Although most basic medical costs are covered by the program, there still exists a need in certain quarters for benefits supplementary to those already provided. In the case of needy citizens, it is possible for the federal government, through the provinces, to finance half the cost of other health care services such as dental services, prescription drugs or eyeglasses through the Canada Assistance Plan. Eligibility for such assistance depends upon a needs test. Each province administers its supplementary welfare programs as it sees fit, and there is no uniformity among them.

Additional coverage for the balance of the population is either paid for entirely by the individual himself or can be purchased through a private carrier. At its discretion, any carrier can market coverage for drugs, dental services, special nurses, allied health professionals, prosthetic appliances, or the cost of extended care accommodation. However, most commercial carriers have displayed a reluctance to market coverage on a non-group basis, and most of the above benefits have been included under "major medical" contracts.

In all provinces, provision has been made for physicians to "opt out" of the medical care plan and to bill their patients directly, rather than through the public authority. Opted-out doctors are generally required to inform their patients of their intention before treating them and they usually charge more than the benefits payable by the provincial plan for their services. This means that their patients are not usually reimbursed for the full amount when they submit their bills to the provincial medical care plan for payment. Opting out by physicians is not a particularly widespread phenomenon in most provinces, being limited to less than 10% of all doctors, and in some provinces there are no opted-out doctors. Many of the non-participating doctors, however, do not in practice bill for a fee higher than the benefits available under the plan if they are aware of an individual's financial difficulties.

6.2.6 Emergency health services

The Emergency Health Services Division, established in 1959 within the federal Department of National Health and Welfare, encourages the provinces, with the support of an advisory committee, to develop their own emergency health services divisions. These are organized under a provincial director who is generally assisted by a health-supplies officer and

a nursing consultant. Federal Emergency Health Services are represented by a staff officer in each province.

The fourfold task of provincial emergency health services is to ensure that vital health functions are maintained during or reorganized after an emergency or disaster; to encourage and assist local planners in the establishment of emergency medical units; to train health professionals and the general public in emergency health procedures; and to place emergency medical units from the national stockpile at strategic locations.

6.3 Medical manpower

6.3.1 Earnings of privately practising physicians

The average gross professional earnings of fee-practising physicians in 1970 were \$50,819, which was 9.7% higher than in 1969 and 93.1% higher than in 1962. The highest average gross earnings in 1970 were reported in Alberta, at \$59,457. In Ontario, Manitoba and Newfoundland they were above the national average and in the remaining provinces they ranged from \$49,178 in Saskatchewan to \$37,269 in the Yukon and Northwest Territories.

Generally, through the nine-year period 1962-70, average gross earnings have been at a higher level in Newfoundland, Ontario and the western provinces than in Quebec and the Maritime Provinces.

The net returns to physicians, after deduction of the expenses of professional fee practice, reveal similar geographic patterns. Net earnings for Canada as a whole averaged \$34,360 in 1970, 11.3% higher than in 1969 and 102.5% above the 1962 figure. The highest provincial average net income was reported by Newfoundland physicians at \$41,562 followed by Alberta physicians at \$39,678.

6.3.2 Number of physicians

In December 1971 there were 32,625 active civilian physicians in Canada. Well over a third, 12,506, were located in Ontario. British Columbia had the lowest population/physician ratio, 615, followed by Ontario with 621, and Manitoba and Quebec, 645 and 662, respectively. The national average at December 1971 was 666 persons per physician.

Table 6.1 gives the provincial distribution and population per physician ratios for 1971 and shows also the historical trend in the national total since 1901. The figures include all junior and senior interns and residents, and physicians engaged in administration, teaching, research, etc., within the medical field, as well as those in the clinical practice of medicine.

6.4 Fitness and amateur sport

The Fitness and Amateur Sport Program was inaugurated in 1961 to increase the number of participants at all levels of competitive and non-competitive physical recreation and amateur sport activity; to help provide the participants with the skills, the means and the opportunity to benefit from recreation; and to help make available to all citizens the facilities and leadership to participate freely in recreational activities of their choice. These objectives are predicated on the assumption that every Canadian should develop a level of fitness sufficient to contribute positively to his physical and mental health and that Canadian athletes should develop a level of performance in national and international competitions which will contribute to national unity and international prestige.

A National Advisory Council on Fitness and Amateur Sport, consisting of not more than 30 members appointed by the Governor in Council with at least one from each province, considers problems connected with such activity and advises the Minister of National Health and Welfare thereon.

The Minister proposed, in March 1970, a new government sports policy for Canadians which identified the twin concerns of competitive excellence and mass participation. To accommodate these areas of concern the program has been divided into two divisions: Sport Canada which has as its primary task the competitive excellence of Canada's athletes; and Recreation Canada which works to encourage increased levels of participation in physical activity. To increase the administrative strength of Canadian sports and recreation agencies the program makes available administrative, financial and other professional assistance.

The federal program for 1972-73 concentrates on: grants and support to national fitness and sport organizations to improve the standards of administration, coaching and instruction, to increase the rate of participation in physical recreation and to provide aid to the holding of

competitions; promotion and support of special projects including the Arctic Games, the Canada Games and the Canada Fitness Award, and assistance in the holding of sports events of nation-wide interest; planning, training, research and communications in support of increased participation in physical recreation by all Canadians; and grants-in-aid to student athletes.

6.5 Federal welfare and social security programs

Responsibility for social welfare is shared by all levels of government. Comprehensive income maintenance measures such as the Canada Pension Plan, old age security pensions, the guaranteed income supplement program, family allowances, youth allowances and unemployment insurance, where nation-wide co-ordination is required, are administered federally. The federal government gives substantial aid to the provinces in meeting the costs of public assistance and also provides services for special groups such as veterans, Indians, Eskimos and immigrants. The Department of National Health and Welfare is generally responsible for federal welfare matters, although the Departments of Veterans Affairs, Indian Affairs and Northern Development, and Manpower and Immigration operate programs for specific groups.

Administration of welfare services is primarily the responsibility of the provinces but the provision of services is often assumed by local authorities, generally with financial aid from the province.

A channel of communication between citizens groups and the Department of National Health and Welfare is provided by the National Council of Welfare. As reconstituted in January 1970, the Council now consists of 21 private citizens about half of whom have been selected from organizations of consumers of welfare services and the remainder from institutions involved, directly or indirectly, in providing welfare services. The Council is responsible for advising the Minister of National Health and Welfare on such matters related to welfare as it deems appropriate as well as to consider matters referred to it by the Minister.

6.5.1 Canada Pension Plan

The Act establishing the Canada Pension Plan (CPP) received Royal Assent on April 3, 1965 and was proclaimed in force on May 5 of the same year. Collection of contributions commenced in January 1966, and in January 1967 the first benefits were paid in the form of retirement pensions. In February 1968 the first survivors benefits were paid, and in February 1970 the first disability benefits were paid.

The Plan is applicable throughout Canada except in Quebec where a comparable pension plan has been established. Until 1973 the Canada and Quebec Pension Plans were closely co-ordinated and operated virtually as a single program. Benefit credits accrued under the Canada or Quebec Plans are portable throughout Canada. Effective January 1, 1973, however, Quebec made substantial changes to its Pension Plan which were not made in the Canada Plan. An outline of these revisions appears in Section 6.7.6.

Under the national Plan, maximum pensionable earnings will be adjusted each year to the end of 1975 in line with changes in the pension index which, in turn, is based on the consumer price index. For 1973 the maximum pensionable earnings are fixed at \$5,600. Beginning in 1976, maximum pensionable earnings for a year will be adjusted in accordance with changes in the earnings index to reflect changes in average wage and salary levels in Canada.

To participate in the Plan, a person must be between the ages of 18 and 70 and earn more than \$600 yearly as an employee, or at least \$800 if he is self-employed. Employees contribute at the rate of 1.8% and a matching contribution is made by their employers; self-employed persons contribute at the rate of 3.6%. Although contributions are made on annual earnings between \$600 and the earnings ceiling, rates of benefit are calculated on total earnings up to that maximum.

The earnings-related component of the benefit which a person is entitled to receive is based on the contributor's average pensionable earnings. Before this average is calculated, however, all earnings are adjusted in line with the average of the maximum on pensionable earnings during the benefit year and the two preceding years. Thus, when a benefit first becomes payable, the earnings on which it is based are related to the maximum on pensionable earnings at that time rather than when the earnings were received.

Benefits are classified under three main categories: retirement pensions; survivors benefits, consisting of a widow's pension, a disabled widower's pension, orphans benefits, and

a lump-sum death benefit; and disability benefits comprising pensions for disabled contributors and benefits for their dependent children. Summary statistics on benefits being paid out of the Canada Pension Plan as at March 1972 appear in Table 6.2.

Beginning in 1970, retirement pensions became payable to contributors aged 65 years or over provided that, if under age 70, they are retired from regular employment; a person under age 70 in receipt of a retirement pension must meet an earnings test. For contributors who have reached age 70, retirement pensions are payable regardless of whether or not they are retired. They become payable at their full rate beginning in January 1976. This rate amounts to 25% of what the updated pensionable earnings of contributors have averaged since January 1, 1966. Contributors who become eligible for retirement pensions prior to 1976 receive reduced amounts. (The method of calculation of these benefits is discussed in detail in previous editions of the *Canada Year Book*.)

Survivors benefits are paid to or on behalf of the survivors of a deceased contributor who has made contributions for the present minimum qualifying period of three years for those whose benefits commence before 1975.

A woman who is widowed between ages 45 and 65 is entitled to a widow's pension consisting of the flat-rate payment plus 37½% of her husband's retirement pension. For 1973 the flat-rate component is \$28.15. Should her husband not be in receipt of a retirement pension at the time of his death, such a pension is calculated in the prescribed manner for the purposes of computing the amount of the widow's pension. If a woman is widowed under age 45, the same pension is paid provided she has dependent or disabled children or is herself disabled. If she does not meet any of these requirements, her pension is reduced by an amount equal to 1/120 for each month she is less than age 45 at the time of her husband's death. Accordingly, if a woman is widowed at age 35 or less, and has no dependent or disabled children and is not herself disabled, she will not receive a widow's pension until she reaches 65 years of age, unless she becomes disabled in the meantime.

A widow aged 65 or over receives a widow's pension equal to 60% of her husband's retirement pension, regardless of her age at the time her husband died or whether she was receiving a widow's pension before she became 65. Again, if her husband was not in receipt of a retirement pension at the time of his death, one is calculated in the prescribed manner in order to compute the amount of the widow's pension. Women who receive widow's pensions may also have contributed to the Canada Pension Plan themselves and consequently may be entitled to retirement or disability pensions in their own right. In such cases, the widow's pension will be combined with the other pension, in accordance with a prescribed formula, but the combined total cannot exceed the maximum retirement pension payable under the Act.

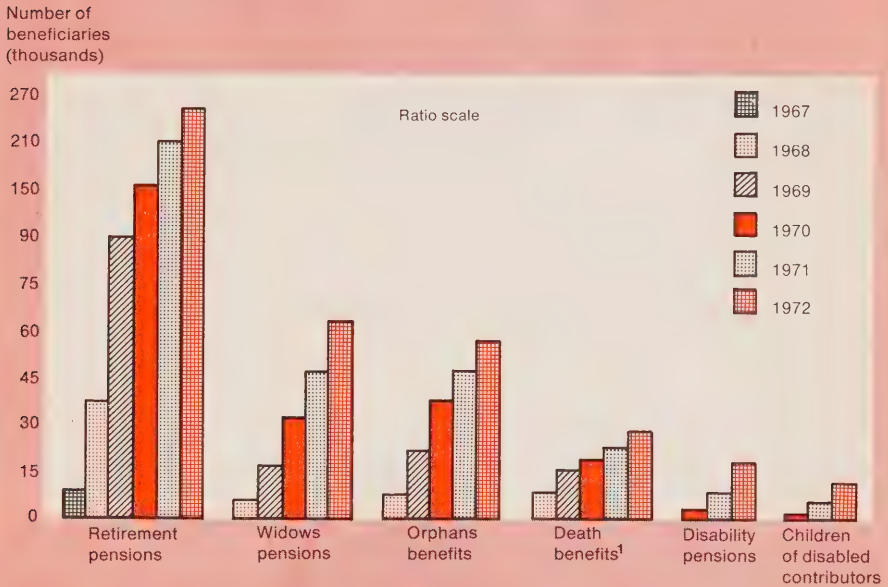
A disabled widower's pension is payable to a disabled widower if he was wholly or substantially dependent on his wife for financial support at the time of her death. The test of disability is the same as that for a person who claims a disability pension and the pension formula is the same as that for a widow aged 45 or more.

Orphans benefits are payable on behalf of a deceased contributor's unmarried dependent children. The rate for each of the first four children is equal to the flat-rate component of the widow's pension (\$28.15 for 1973); for more than four children the total benefit, which is divided equally among the children, is the sum of \$28.15 for each of four, and half of that amount for each child in excess of four. Benefits are payable until the child reaches age 18 or up to age 25 if he continues to attend school or university full-time.

A contributor is considered to be disabled if he has a physical or mental disability that is so severe and likely to continue so long that he is incapable regularly of pursuing any substantially gainful occupation. Disability pensions, plus benefits for the dependent children of disabled contributors, are available provided contributions have been made to the Plan for the present minimum qualifying period of five years. The amount of the pension consists of a flat-rate payment equal to the flat-rate component of a widow's pension plus 75% of what the contributor's monthly retirement pension would have been had he reached age 65 when his disability pension commenced. Benefits are payable on behalf of a disabled contributor's dependent children at the same rates and under essentially the same circumstances as the orphans benefits.

When a contributor dies, a lump-sum death benefit equal to six times his monthly retirement pension is paid to his estate. This benefit is subject to a maximum of 10% of the maximum on pensionable earnings. Should a contributor not be in receipt of a retirement

Canada Pension Plan benefits: number of beneficiaries, by type of benefit, as at December 31, 1967-72



pension at the time of his death, a calculation is made in the prescribed manner to establish the amount of the death benefit.

All monthly benefits are adjusted upward annually effective each January if changes in the pension index warrant it. The maximum increase is 2%.

Any contributor or beneficiary under the Plan has the right to appeal decisions with which he is dissatisfied. Appeals by employees and employers regarding coverage and contributions are first made to the Minister of National Revenue and, if the individual is not satisfied with the Minister's decision, he may appeal to the Pension Appeals Board whose decision is final. For self-employed persons, appeals with reference to the assessment of their earnings for Canada Pension Plan purposes are treated in the same way as appeals under the Income Tax Act. With respect to benefits, there is a three-stage appeal procedure: first, to the Minister of National Health and Welfare; second, to a Review Committee; and third, to the Pension Appeals Board whose decision is final.

The legislation provides for the investment of the funds that accrue from monthly contributions, less the estimated amounts required to pay benefits and administrative costs over a three-month period. These funds are made available to each province on the basis of the relationship between the contributions made to the Plan by and on behalf of residents of that province and the total contributions made to the Plan. Funds not borrowed by the provinces are invested in federal securities. The Canada Pension Plan is entirely self-supporting in that all benefits and all costs incurred in the administration of the program are financed solely from the contributions made by employees, employers and self-employed persons and the interest earned from the investment of funds. A statement of the Canada Pension Plan's financial situation appears in Tables 6.3 and 6.4.

An Advisory Committee representing employers, employees, self-employed persons and the public, reviews from time to time the operations of the Plan, the state of the investment fund and the adequacy of coverage and benefits, and reports to the Minister of National Health and Welfare. The legislation authorizes arrangements to be made with other countries to achieve as full coverage of persons in the labour force in Canada as is possible and to ensure the portability of pension credits between Canada and the countries concerned.

The Minister of National Health and Welfare is responsible for the administration of all parts of the program except coverage and the collection of contributions which come under the jurisdiction of the Minister of National Revenue. The Unemployment Insurance Commission is responsible for the assignment of social insurance numbers and for the maintenance of the Central Index. The Department of Finance is responsible for the administration of the Canada Pension Plan Account and the Canada Pension Plan Investment Fund. The Department of Supply and Services gives assistance to the Department of National Health and Welfare in the operation of the electronic data processing service which is required to maintain the records of earnings of contributors and to calculate benefits payable under the Plan. The Chief Actuary, Department of Insurance, is responsible for the preparation of reports on the future financial progress of the Plan and on the effect on the Fund of proposed amendments to the Plan.

The Canada Pension Plan Administration of the Department of National Health and Welfare consists of a head office establishment in Ottawa, a network of district offices located in the major population centres in Canada outside Quebec, and local offices operated on a part-time basis.

Private pension plans. Subsequent to introduction of the Canada and Quebec Pension Plans, legislation aimed at establishing more uniform standards for private pension plans was introduced at the federal level as well as in a number of provincial jurisdictions. A more detailed description appears in the *1972 Canada Year Book*, p. 360.

6.5.2 Old age security and guaranteed income supplement

Old age security. Under the Old Age Security Act of 1951, as amended, the federal government pays a monthly pension to all persons aged 65 or over who meet the necessary residence qualifications. Effective from April 1, 1973, the basic old age security pension was raised to \$100 a month. This will be adjusted each April by the full increase in the consumer price index.

The old age security pension is payable to a person of attained age who has resided in Canada for ten years immediately preceding the approval of his application for the pension. Any gaps in the ten-year period may be offset if the applicant had been present in Canada in earlier years for periods of time after reaching age 18 equal in total to three times the length of the gaps; in this case, however, the applicant must also have resided in Canada for one year immediately before the month in which his application for pension may be approved. The pension is also payable to persons of attained age who have left Canada before reaching that age but who have had 40 years of residence in Canada since age 18. A pensioner may absent himself from Canada and continue to receive payments. If he has lived in Canada for 20 years since his 18th birthday, payment outside Canada may continue indefinitely; if not, payment is continued for six months, in addition to the month of departure, and is then suspended, to be resumed only with the month in which he returns to Canada.

The program is administered by the Income Security Branch of the Department of National Health and Welfare through regional offices located in each provincial capital; application for pension should be made through these offices. The regional office in Edmonton administers the program for residents of the Yukon and Northwest Territories. Up to the end of 1971, the old age security plan was financed through a 3% sales tax, a 3% tax on corporation income and, subject to a limit of \$240 a year, a 4% tax on taxable personal income. The revenues from these sources were paid into the Old Age Security Fund. The Old Age Security Act was amended effective January 1, 1972, to repeal these taxes and to provide for the crediting to the Fund of an amount estimated to be equal to what would have been credited had these taxes not been repealed. Old age security pensions and benefits under the guaranteed income supplement program are paid from the Fund. Summary statistics concerning the old age security program appear in Tables 6.5 and 6.6.

Guaranteed income supplement. A 1966 amendment to the Old Age Security Act provides for the payment of a monthly guaranteed income supplement (GIS) to old age security pensioners who have little or no income other than the pension. When the program commenced on January 1, 1967, the maximum supplement was \$30 a month; after 1967, it was 40% of the amount of the old age security pension. An amendment passed in December 1970 raised the maximum monthly supplement to \$55 for a single pensioner and to \$95 for a married couple, both of whom were pensioners. A further amendment in 1972 increased the GIS benefits to \$67.12 a month for a single pensioner and \$119.24 for a married couple effective January 1, 1972. The increase in the basic OAS pension to \$100 and escalation of GIS benefits effective April 1, 1973 will provide a minimum income consisting of the OAS pension and GIS supplement of \$170 a month for a single pensioner and \$325 a month for a pensioner couple. GIS benefits are escalated each April by the full increase in the consumer price index.

Pensioners with income in addition to their old age security pension may receive partial benefits. The maximum supplement is reduced by \$1 a month for every full \$2 a month of income over and above the old age security pension and any supplement that may have been received. Income for this purpose is the same as that computed in accordance with the Income Tax Act. In the case of a married couple, each is considered to have one half of their combined income. Where one spouse will not be receiving an old age security pension at any time in the current year, six times the amount of the monthly old age security pension is deducted from one half of the combined income in calculating the income of the pensioner for guaranteed income supplement purposes.

The guaranteed income supplement program is administered in conjunction with the old age security pension program. An application for the supplement is sent to each person when he begins to receive the old age security pension and subsequently at the beginning of each calendar year. Entitlement is reassessed each year on the basis of the pensioner's income in the preceding year.

6.5.3 Family allowances

The Family Allowances Act of 1944 assists in providing equal opportunity for all Canadian children. The allowances do not involve a means test and are paid from the federal Consolidated Revenue Fund. They do not constitute taxable income but there is a smaller income tax exemption for children eligible for allowances.

Allowances are payable in respect of every child under age 16 who was born in Canada, or who has been a resident of the country for one year, or whose father or mother has been domiciled in Canada from a date three years immediately prior to the date of birth of the child. Payment is made by cheque each month, normally to the mother, although any person who substantially maintains the child may be paid the allowance on his behalf. Allowances are paid at the monthly rate of \$6 for each child under ten years of age and \$8 for each child age ten or over but under 16 years. If the allowances are not spent for the purposes outlined in the Act, payment may be discontinued or made to some other person or agency on behalf of the child. Allowances are not payable for any child who fails to comply with provincial school attendance legislation, who ceases to be maintained by a parent or who ceases to be a resident of Canada, or on behalf of a girl who is married and under age 16. Details of the operations of the plan for the year ended March 31, 1972 appear in Table 6.7.

The program is administered by the Department of National Health and Welfare through regional offices located in each provincial capital. The regional director located at Edmonton also administers the accounts of residents in the Yukon Territory and Northwest Territories.

The federal government pays family assistance, at the rates applicable for family allowances, for each child under 16 years of age resident in Canada and supported by an immigrant who has landed for permanent residence in Canada, or by a Canadian returned to Canada to reside permanently. The assistance, which is payable monthly for the first year of the child's residence in Canada, is intended to bridge the gap until the child becomes eligible for family allowances. The eligibility requirements, other than that relating to residence, are the same for family assistance as for family allowances.

Quebec introduced its own family allowances program, supplementing the federal scheme, under legislation enacted in 1967 (see Section 6.7.4). The Newfoundland program, called the Parents' Supplement (Schooling Allowance) introduced in 1966 under which payments were made for children attending school, was discontinued in July 1972.

6.5.4 Youth allowances

Legislation providing for a program of youth allowances became effective September 1, 1964. The federal government does not provide youth allowances in Quebec, which has had its own program called Schooling Allowances since 1961 (see Section 6.7.5). Quebec is compensated by a tax abatement adjusted to equal the amount that the federal government would otherwise have paid in allowances to Quebec residents. The federal youth allowances and the comparable Quebec schooling allowances programs cover all eligible young people in Canada. Summary statistics of the operations of this program at the federal level appear in Table 6.8.

Under the federal program, monthly allowances of \$10 are payable for all dependent children aged 16 and 17 who are receiving full-time educational training or are precluded from doing so by reason of physical or mental infirmity. Both the parent or guardian and the child must normally be physically present and living in a province other than Quebec. The allowance is not payable to a parent who resides in Quebec or outside Canada, regardless of where his child may be attending school. However, a child may attend school in Quebec or outside Canada, or, if disabled, receive care or training in Quebec or outside Canada and still be considered eligible, on the basis that he is a resident of a province other than Quebec but is temporarily absent.

Allowances normally commence with the month following that in which family allowances cease and continue until the school year terminates. They are paid retroactively for the summer months when the child returns to school at the commencement of the new school year, although allowances for a disabled child not attending school are payable continuously throughout the year. Should a student leave school, leave the country permanently, cease to be maintained, take up residence in Quebec, or die, the allowance ceases. Otherwise, the youth allowance continues until the end of the month in which the young person reaches age 18. Youth allowances are not considered to be income for any purpose of the Income Tax Act.

The program is administered by the Income Security Branch of the Department of National Health and Welfare through regional offices located in each of the provincial capitals other than Quebec City. The costs of youth allowances are met from the Consolidated Revenue Fund.

6.5.5 Emergency welfare services

The function of the Emergency Welfare Services Division of the Department of National Health and Welfare is to develop community capability to provide, in the event of a national emergency, essential welfare services not available through established welfare agencies. A 1965 Order in Council set up five emergency welfare services — emergency clothing, emergency feeding, emergency lodging, registration and inquiry, and personal services — and gave the division responsibility for the continuation of welfare departments in support of rehabilitation and recovery. To these ends, policy has been defined, systems designed and, at all levels of government, welfare resources planned.

In peacetime, trained specialists within the federal, provincial and municipal departments of welfare, organized nationally, are responsible for developing an emergency welfare capability. The program is an integral part of the Canada Survival Plan and is co-ordinated with the programs of other Canadian government departments and private agencies. Leaders are trained in the art of organizing large numbers of volunteers for emergency welfare operations and a public education program is maintained. Special printed forms and equipment for survival, not regularly available through commercial sources, have been produced and are located strategically across Canada.

6.5.6 International welfare

Canada is actively involved in the social development activities of the United Nations and in the work of a number of international voluntary agencies in the social welfare field; it is also a member of the Executive Board of the United Nations Children's Fund. In addition, the Canadian government, together with provincial governments and agencies, participates actively in the work of several international voluntary organizations including the International Council on Social Welfare and the International Union of Family Organizations.

The Department of National Health and Welfare, through the programs of the Canadian International Development Agency, assists in the planning and implementation of a number

of social welfare projects in developing countries, provides advisers for services abroad, and arranges for training for students and government officials when recommended by their governments.

A Convention on Social Security between Canada and the Federal Republic of Germany became effective May 1, 1972. The general purpose of the convention is to ensure that rights acquired under certain social security programs in one country are not lost by persons who migrate to and perhaps become citizens of the other country. Discussions concerning bilateral agreements on social security have been held with the United Kingdom, Italy and the United States. Australia has proposed an agreement with Canada. A number of other countries have expressed interest in possible agreements.

Canadian officials engaged in the social security field participate in the work of the International Social Security Association and the social security program of the International Labour Organization. For some years, Canada has had observer status at meetings of the Inter-American Social Security Association.

6.6 Federal-provincial welfare programs

6.6.1 Canada Assistance Plan

The Canada Assistance Plan was enacted in 1966 as a comprehensive public assistance measure to complement other income security measures. It provides, under agreements with the provinces, for federal contributions of 50% of the costs of assistance to persons in need and of the costs of certain welfare services. The Plan has largely replaced the Unemployment Assistance Act, 1956, although the latter continues in effect in the Northwest Territories and in some provinces for an interim period with respect to certain programs using a means test that are being phased out but that are not covered under the Canada Assistance Plan. The arrangements for contracting out of certain shared-cost programs introduced in 1965 under the Established Programs (Interim Arrangements) Act are applied to Quebec's agreement. The Plan authorizes the provinces to discontinue their programs of blind persons allowances and disabled persons allowances and instead give aid under their general programs with costs shared under the Plan. The sharing of costs of work activity projects to prepare persons for employment and the extension of provincial welfare services to Indians on reserves, on Crown lands or in unorganized territory are governed by special agreements. Statistics on the number of beneficiaries of assistance under the Plan as well as on the amounts of allowances paid and the cost to the federal government are shown in Tables 6.9 - 6.10.

The only eligibility requirement specified is that of need, which is determined through an assessment of budgetary requirements as well as of income and resources but rates of assistance and other eligibility requirements are set by the province so that they may be adjusted to local conditions and the needs of special groups. A province may not, however, require previous residence as a condition of eligibility for assistance or for continued assistance, and the provinces must establish procedures for appeal from decisions that relate to the provision of assistance.

"Assistance" for purposes of federal contributions includes any form of aid to or on behalf of persons in need for the purpose of providing basic requirements such as food, shelter and clothing; items necessary for the safety, well-being or rehabilitation of a person in need, or for a handicapped person; care in homes for special care such as a home for the aged, a nursing home or a welfare institution for children; travel and transportation; funerals and burials; health care services; welfare services purchased by or at the request of provincially approved agencies; and comfort allowances for inmates of institutions.

The federal share of costs under the Unemployment Assistance Act amounted to \$1.7 million during the year ended March 31, 1972. This includes payments to Quebec under the Established Programs (Interim Arrangements) Act.

6.6.2 Blind and disabled persons allowances

Federal reimbursement to the provinces for assistance to blind persons and persons permanently and totally disabled, aged 18 or over, is provided for under the Blind Persons Act, 1951, as amended, and the Disabled Persons Act, 1954, as amended. To be eligible for an allowance under either of these Acts, an applicant must meet the ten-year residence requirement and the income requirements. Total income, including the allowance, may not exceed \$1,260 a year for an unmarried person, \$2,220 a year for a married couple or \$2,580 a

year for a married couple when the spouse is blind within the meaning of the Blind Persons Act. Under the Blind Persons Act, total income, including the allowance, may not exceed \$1,500 a year for an unmarried person, \$1,980 a year for a person with no spouse but with one or more dependent children, \$2,580 for a married couple and \$2,700 a year for a married couple when the spouse is also blind.

The federal contribution is 50% of \$75 a month or the allowance paid, whichever is less, for disabled persons allowances, and 75% of \$75 a month or the allowance paid, whichever is less, for blind persons allowances.

Beginning on April 1, 1965 payments to Quebec have been made under the terms of the Established Programs (Interim Arrangements) Act.

Under the terms of the Canada Assistance Plan, a province may elect to aid needy persons in these categories under a general assistance program with costs shared under the Plan. By the end of 1972 Newfoundland, Prince Edward Island, Nova Scotia, Quebec, Ontario, Saskatchewan and Alberta had discontinued receipt of applications for disabled persons allowances, and four of these provinces, Quebec, Ontario, Saskatchewan and Alberta, had also discontinued receipt of applications for blind persons allowances.

Details on the operations of the various programs of allowances for the blind and for disabled persons appear in Table 6.11.

6.6.3 National welfare grants

The National Welfare Grants program was established in 1962 to help develop and strengthen welfare services in Canada. Under the program, project grants are made to provincial and municipal welfare departments, non-governmental welfare agencies, citizen organizations and universities. Fellowships are provided to individuals seeking advanced training in the social welfare field. The variety of provisions within the program along with its associated consultative services allows it to operate as a flexible instrument in the development of welfare services and to give major emphasis to experimental activities in the welfare field. The allotment for the year ended March 31, 1972 was almost \$2.7 million.

General welfare bursary training and staff development grants are available to provinces on a shared-cost basis, with the other provisions of the program being administered and financed entirely by the federal government. Demonstration, research and social action projects in a wide range of social welfare subject areas are eligible for grants, as are developmental projects related to welfare manpower. Fellowships available for study at Canadian and foreign universities and grants available to assist Canadian schools of social work with teaching and field instruction costs are scheduled to terminate March 31, 1974.

With the advent of the Canada Assistance Plan, increasing attention has been given to experimental activities under the National Welfare Grants program to encourage innovative approaches to the solution of social problems and the provision of welfare services.

Effective April 1, 1967, a mental retardation grant was established for a five-year period; part of this grant is administered in conjunction with the National Welfare Grants program and the original term has now been extended to permit complete utilization of the fund. Support is given to research and demonstration projects designed to expand knowledge and to apply that knowledge to the provision of services and to preventive programs in that field.

Expenditures under the National Welfare Grants program for the year ended March 31, 1972 totalled \$2.3 million and under the Mental Retardation Grant \$138,446. Of the former, \$1.0 million was expended on demonstration projects, \$410,127 on research projects, \$576,951 on manpower utilization and development, including demonstration, national agency, teaching and field instruction, fellowships and scholarships, \$139,818 on general national agency projects and \$118,067 on general welfare projects including the provincially administered bursary and staff development programs.

6.6.4 Vocational rehabilitation

The federal-provincial vocational rehabilitation program, which began in 1952, was consolidated and extended under the Vocational Rehabilitation of Disabled Persons Act, 1961. Agreements under this Act provide for equal sharing of costs between the federal government and the provinces or territories. These costs include co-ordination and provision of services to disabled or other vocationally disadvantaged individuals, training of rehabilitation personnel, and research and publicity. Approved services supplied by a

provincial government or purchased from voluntary agencies by a provincial government include medical, social and vocational assessment, intensive counselling, restorative services, the provision of prostheses, vocational or educational upgrading, rehabilitation allowances, work conditioning, and provision of tools, books and other equipment. Employment counselling and placement are provided through the Canada Manpower Centres of the Department of Manpower and Immigration or by the voluntary agencies from which services are purchased.

In each participating province, a provincial co-ordinator or director of rehabilitation is responsible for the co-ordination and administration of services to disabled or vocationally disadvantaged persons. The federal aspects of the program are administered by the Manpower Utilization Branch of the Department of Manpower and Immigration in co-operation with the Department's five regional offices. The Manpower Utilization Branch also has responsibility for the development of services for other persons suffering occupational disadvantages. Its role is to encourage a more favourable employment climate for older workers through a continuing educational program, to encourage research, maintain liaison with management, labour and voluntary agencies, to assemble and disseminate informational material concerning gerontology in industry, and to furnish supportive services to the Canada Manpower Centres.

In the year ended March 31, 1972, federal expenditures under the vocational rehabilitation program totalled \$6.5 million. Reports received on 5,909 disabled persons rehabilitated during the year indicated that, at the end of the year, 4,005 of them were rehabilitated to regular employment and 428 to sheltered employment or self-care; 240 were rehabilitated as homemakers. The cost of support of those who obtained employment and of their dependants was estimated, before rehabilitation, at \$4 million annually; their aggregate earnings, following rehabilitation, were estimated at \$16 million.

6.6.5 Family planning

A Family Planning Division in the Social Allowances and Services Branch of the Department of National Health and Welfare was established in January 1972 to provide a centre of responsibility for the federal family planning program. Its objective is to ensure the accessibility and availability of family planning services to all Canadians who want them. The division carries out this mandate by informing Canadians about the purpose and methods of family planning so that the exercise of free individual choice in this area will be based on adequate knowledge; by promoting the training of health and welfare professional and other staff involved in family planning services; by promoting relevant research in family planning; and by supporting family planning programs operated under public or voluntary auspices through federal grants-in-aid and joint federal-provincial shared cost programs.

The Division's program includes consultation, information, and family planning grants. Informational-educational materials on family planning, sex education, and family life education are distributed in quantity, free of charge, by the Division.

During the 1972-73 fiscal year, a total of \$1.1 million was available through the family planning grants for the support of family planning services and demonstration, training, and research projects. Grants have been made for research fellowships, seminars, conferences and the programs of national voluntary agencies.

6.7 Provincial welfare programs

Major welfare programs governed by provincial legislation include social assistance, services for the aged and child welfare services. In addition, Quebec operates the Quebec Pension Plan which is comparable to the Canada Pension Plan described in Section 6.5.1, a youth allowances program as outlined in Section 6.7.5, and a supplementary family allowances program, details of which appear in Section 6.7.4. Provincial departments of public welfare are responsible for the administration of welfare programs, although they may share their administration in certain fields with their municipalities.

Public services are supplemented by those of voluntary agencies whose interests include the welfare of families and children and of groups with special needs, such as the aged, recent immigrants, youth groups and released prisoners. Welfare councils and social planning councils contribute to the planning and co-ordinating of local welfare services. Local voluntary agencies and institutions may receive public grants, depending on the nature and standard of their services, although their main support is usually from United Appeal funds or from sponsoring organizations.

6.7.1 Social assistance

All provinces make legislative provision for assistance to persons in need and their dependants. All have incorporated provisions for allowances to needy mothers with dependent children in a broadened program of provincial allowances to several categories of persons with long-term need or in a general program under which the only eligibility requirement is need, irrespective of the cause of need.

In addition to allowances to cover items of basic need, such as food, clothing, shelter, fuel and utilities, all provinces make provision for such special items as rehabilitation services, expenses incidental to education or obtaining employment, counselling, homemaker services and institutional care. The provinces are reimbursed by the federal government under the Canada Assistance Plan for 50% of the costs of assistance and of certain welfare services given by the provincial and municipal authorities (Section 6.6.1). The provincial departments of welfare set rates of assistance and conditions of eligibility; they have regulatory and supervisory powers over municipal administration of assistance, and require certain standards as a condition of provincial aid. Length of residence is not a condition of aid in any province, but municipal residence may determine the financially responsible authority. The provincial authority takes responsibility for aid in unorganized areas within the province and for persons who lack municipal residence.

The administration of assistance varies. In four provinces, allowances to persons with long-term need such as needy mothers with dependent children, disabled persons and the aged, are administered by the province and other allowances are administered by the municipalities. In Newfoundland, Prince Edward Island and New Brunswick, all assistance is administered by the provincial authority. In Quebec, the province administers assistance through regional and local offices, except in the city of Montreal where the municipality administers assistance on behalf of the province. In Saskatchewan, social assistance is administered by the province except in two municipalities which elected to retain responsibility for administration of the program. In British Columbia, a comprehensive program of general assistance is administered by the local authority, i.e., by the municipalities except in sparsely populated municipalities and in areas without municipal organization where aid is administered by the province; the province also administers a program of supplementary allowances to recipients of old age security pensions, and the two categories of federal-provincial allowances. In the seven provinces where the municipalities have some administrative responsibility, the proportion of the costs of aid borne by the province varies from 40% to 100%.

6.7.2 Child welfare services

Child welfare services, which include child protection and care, services for unmarried parents and adoption services, are available under provincial legislation in all provinces. The programs are administered by the provincial authority or by local children's aid societies (voluntary agencies with boards of directors operating under charter and under the general supervision of provincial departments). In Newfoundland, Prince Edward Island, New Brunswick, Saskatchewan and Alberta, child welfare services are administered by the province; in Quebec, they are administered by recognized voluntary agencies and institutions, religious and secular; in Ontario, a network of local children's aid societies is responsible for the services; in Nova Scotia, Manitoba and British Columbia, services are administered by local children's aid societies in the heavily populated areas and by the province elsewhere.

Children's aid societies and the recognized agencies in Quebec receive substantial provincial grants and sometimes municipal grants and in many areas they also receive support from private subscriptions or from United Appeal funds. The costs of certain services and maintenance costs for children in care of a voluntary or public agency are sharable with the federal government under the Canada Assistance Plan as described in Section 6.6.1.

Services are provided as appropriate and include services to children in their own homes, care in foster boarding homes or adoption homes or, for children who need it, in selected institutions. Institutions for children are governed by provincial child welfare legislation and are generally subject to inspection and in some provinces to licensing. Children placed for adoption may be wards or they may be placed on the written consent of the parent. Adoptions, including those arranged privately, number about 20,000 annually.

Day nurseries for the children of working mothers are operated under either voluntary or

public auspices. A number of provinces make capital grants for the establishment of day care centres and provide operating subsidies.

6.7.3 Living accommodation for elderly persons

In all provinces, homes for the aged and infirm are provided under provincial, municipal or voluntary auspices. These homes are required to meet standards set out in provincial legislation relating to homes for the aged, welfare institutions or public health. Voluntary homes are usually provincially inspected and in some provinces must be licensed.

All provinces in varying degrees make capital grants toward the construction or renovation of homes for the aged by municipalities or voluntary organizations and, generally speaking, such homes are exempt from municipal taxation. Some provinces also make provision for capital grants to municipalities, charitable organizations or non-profit corporations for the construction of low-rental housing for elderly persons. These projects are usually built under Section 15 of the National Housing Act, which provides for long-term low-interest loans to non-profit corporations constructing low-rental self-contained or hostel accommodation for older people. Units for the aged may also be included in low-rental public housing projects for families, built under Section 43 of the Act.

In some provinces efforts are made to place well, elderly people in small proprietary boarding homes. Those who are chronically ill may be cared for in chronic or convalescent hospitals, private or public nursing homes and some homes for the aged. All provinces contribute to the maintenance of needy persons in homes for the aged or other homes for special care, and these costs are shared by the federal government under the Canada Assistance Plan (see Section 6.6.1).

6.7.4 Quebec's family allowances program

Quebec introduced its own family allowances program under legislation enacted in 1967. Under this plan, the following allowances are paid at the end of each six-month period to persons satisfying the relationship and residence requirements in respect of children under 16 years of age: \$15 for one child, \$32.50 for two children, \$52.50 for three children, \$77.50 for four, \$107.50 for five, \$142.50 for six, and an extra \$35 for each child after the sixth. These allowances are increased by \$5 for each child between the ages of 12 and 16 years. To qualify for the allowances, children must attend school regularly from the time when they are first required to do so, unless prevented by physical or mental infirmity. These allowances supplement those paid under the federal scheme.

6.7.5 Quebec schooling allowances

The federal government does not provide youth allowances in Quebec, which has had its own program, called Schooling Allowances, since 1961. With the introduction of the federal youth allowances scheme, Quebec agreed to make certain changes in its schooling allowances program so that it would be comparable to the federal measure.

Monthly allowances of \$10 are payable with respect to dependent youths aged 16 and 17 who are in school full time or prevented from full-time school attendance by mental or physical infirmity. Parents must be resident in the province of Quebec but children may attend school or, if disabled, receive care or training anywhere inside or outside Canada. Allowances normally commence with the month following that in which family allowances cease and continue until the end of the month in which the youth reaches age 18. Allowances are suspended for July and August but are paid retroactively for these two months at the commencement of the new school year, with the exception that allowances are paid continuously throughout the year with respect to disabled youths. Should a student leave school, leave Quebec permanently, cease to be maintained, or die, the allowance will cease.

Quebec is compensated by a tax abatement adjusted to equal the amount that the federal government would otherwise have paid in allowances to Quebec residents.

The Schooling Allowances program is administered by the Quebec Department of Social Affairs. In March 1972, 201,119 youths were assisted under this program. Expenditures for 1971-72 amounted to \$23 million.

6.7.6 Quebec Pension Plan

The Quebec Pension Plan was established in 1965 as the Quebec counterpart of the Canada Pension Plan for operation in the province. Until the end of 1972 both plans were closely co-ordinated and operated virtually as a single program.

In 1972 Quebec amended its Plan to make changes to take effect on January 1, 1973. Maximum escalation under the pension index was raised from 2% to 3%. Maximum pensionable earnings were increased from \$5,500 in 1972 to \$5,900 in 1973; these ceilings will rise to \$6,100 in 1974 and to \$6,300 in 1975. The widow's pension, the disabled widower's pension for pensioners under 65 and the disability pension were all increased in that the flat rate portion of these pensions which was \$27.60 a month in 1972 was increased to \$80.00 in 1973. The amount of orphan's benefit and the benefit for a disabled contributor's child will no longer be reduced when the number of children in a family exceeds four. The orphans' and children's benefits will be fixed at \$29.00 a month from January 1974. The retirement test was altered as well; commencing in 1973 a retired pensioner under age 70 will be entitled to earn \$1,020 annually and still receive the full amount of his pension and when his earnings are over \$1,020 the pension will be reduced by 50 cents for each dollar earned in excess of this amount. Administrative arrangements have been worked out between the Canada Pension Plan and Quebec Pension Plan to deal with dual contributors. In 1971, 125,343 beneficiaries received \$43.5 million in benefits.

6.8 Health and welfare statistics

6.8.1 Government expenditures on health and welfare

In the years ended March 31, 1963-71, expenditures by all levels of government on health and social welfare rose approximately two and a half times from \$3,899 million to an estimated high of \$10,027 million. If these figures are adjusted to take account of the growth in population, the increase in per capita expenditures from \$208 to \$466 was about 124%. Government expenditures may also be measured in relation to major economic indicators; on this basis, annual government expenditures on health and social welfare over the 1963-68 period remained relatively stable, fluctuating between 11.5% and 12.9% of net national income and between 8.6% and 9.7% of gross national product. Since 1968, however, they have tended to rise from year to year. Table 6.12 gives the relevant statistics.

The federal share of health and social welfare expenditures fell from 68.8% in 1962-63 to 57.8% in 1970-71, the provincial share rose from 28.2% to 40.1%, and municipal outlays declined from 3.0% to 2.1%.

Compared with the previous year, 1969-70, health and social welfare expenditures by all levels of government increased by \$1,450 million or close to 17%. This may be compared to the rise of \$1,178 million or 16% in 1969-70 over 1968-69. Expenditures by the federal and provincial governments increased by 14.6% and 20.8%, respectively, from 1969-70 to 1970-71. The main items causing this rise included higher disbursements under the old age security and guaranteed income supplement programs, principally because of the lowering of the eligible age and increase in the monthly benefits paid, the increased expenditures under the Canada Assistance Plan, much higher expenditures under the Unemployment Insurance Act, increases under the Canada Pension Plan, greater outlays for health and welfare for the Indian and Eskimo populations, and constantly rising expenditures under the Hospital Insurance and Diagnostic Services Act, and the Medical Care Act.

The relative federal declines, compared to provincial gains in recent years, have been caused to a substantial degree by increasing hospital expenditures by the provincial government augmented by the effect of the "opting-out" arrangements made available to the provinces. Under the Established Programs (Interim Arrangements) Act, a province may choose to receive contributions from the federal government in the form of a tax abatement and an equalization payment in lieu of a direct federal contribution under the Program. The "opting-out" arrangements have the effect, in this presentation, of showing an increase in provincial government expenditures while the federal fiscal payment is treated not as an expenditure but as a transfer payment. Thus, provincial expenditures include gross outlays by Quebec whereas federal expenditures on health and social welfare do not include the large sums paid or transferred to that province under the Established Programs (Interim Arrangements) Act and other fiscal arrangements.

The proportion of government expenditures on health and social welfare taken up by health programs continues to grow; in 1962-63 such programs accounted for \$1,247 million or 32% of the total and in 1970-71 they amounted to \$4,380 million or 44%.

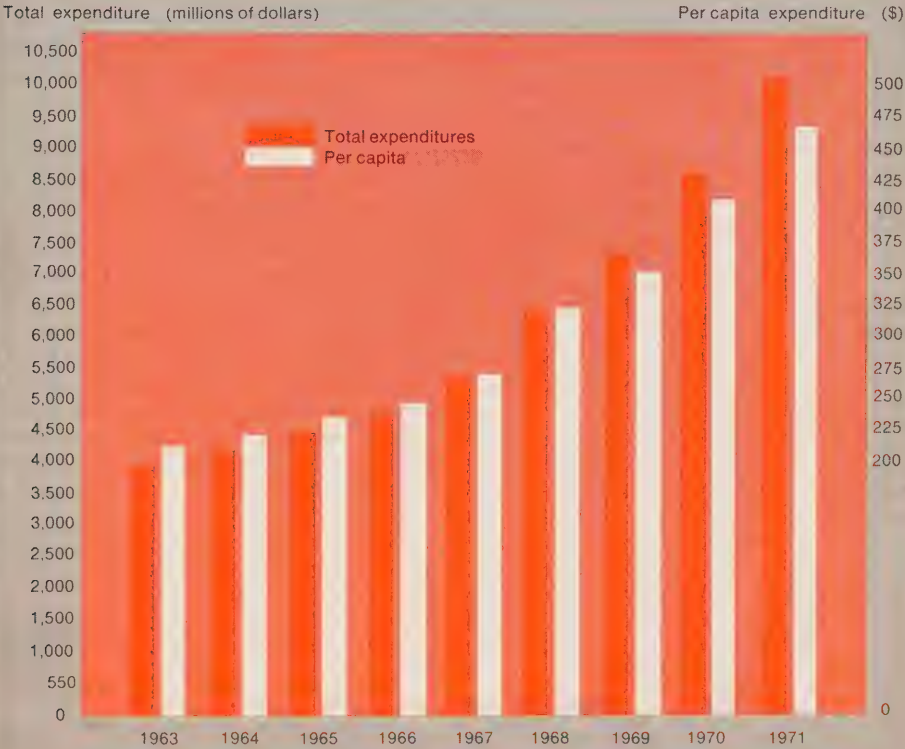
An outline of the principal federal income maintenance programs for 1970-71 shows the

magnitude of the major programs and services — family allowances payments amounted to \$560 million, old age security payments to \$1.627 million plus another \$280 million under the guaranteed income supplement program, unemployment insurance benefits to \$758 million and veterans pensions and allowances to \$214 million and \$89 million, respectively. In addition, payments under the youth allowances program, which commenced in September 1964, amounted to \$60 million excluding \$22 million under Quebec's schooling allowances program, which is financed by a federal fiscal transfer. In 1967-68 Quebec inaugurated its own family allowances program supplementing the federal scheme (see Section 6.7.4).

Canada Assistance Plan expenditures in 1970-71 were \$391 million. To this should be added an estimated \$200.3 million transferred to Quebec under the Established Programs (Interim Arrangements) Act. Provincial workmen's compensation boards paid out \$230 million in cash benefits for pensions and compensation.

In the field of health, federal grants to the provinces under the Hospital Insurance and Diagnostic Services Act totalled \$734 million. Hospital construction grants to the provinces and municipalities were terminated on March 31, 1970. Provincial expenditures on hospital care were estimated at \$1,825 million and expenditures on other health services at \$990 million. In addition, provincial workmen's compensation boards paid \$75 million for medical aid and hospitalization, and municipal governments spent an estimated \$100 million on health.

**Total and per capita
government expenditure on health and
social welfare, from 1963 to 1971**



6.8.2 Hospital statistics

Canadian hospitals are categorized, for statistical purposes, according to type of ownership — public, private or federal — and type of service — general, allied special (chronic, convalescent, rehabilitation, maternity, communicable diseases, children's or orthopedic), mental or tuberculosis. General hospitals, which account for the largest proportion of beds, are divided into teaching (full and partial teaching) and non-teaching (with and without long-term units) types, which are further subdivided into varying bed-size groups based on rated bed capacity.

Data pertaining to the number of hospitals in operation (Table 6.13), their classification and rated bed capacity (Table 6.14) were available as at January 1, 1972 at the time of preparation of this text but 1970 data were the latest available for all other tables in this Section.

Table 6.13 shows that the number and bed capacity of hospitals operating in Canada have remained relatively stable in recent years.

Table 6.14 gives the number and bed capacity of public, private and federal hospitals operating in Canada in 1971 and 1972, classified by province and by service type. In 1972 public hospitals accounted for 93.8% of total rated bed capacity of all hospitals followed by federal hospitals (3.6%) and private hospitals (2.6%). Corresponding 1971 proportions of 93.7%, 3.7% and 2.6%, respectively, were almost identical. The proportion of rated beds in general and allied special hospitals as a group has been increasing in recent years while rated bed capacity in mental hospitals and tuberculosis sanatoria on the whole has decreased. In 1972, general hospitals accounted for 57.4% of total rated beds as compared to 57.1% in 1971 (5.6 beds per 1,000 population in both years). Provincially, Saskatchewan had the highest ratio of general hospital beds per 1,000 population (7.4) in both 1971 and 1972 while Quebec and Newfoundland reported the lowest ratio with 4.8 in 1971 and 4.7 in 1972. The rated bed capacity of mental hospitals declined from 28.5% of total rated beds in 1971 (2.8 per 1,000 population) to 27.8% in 1972 (2.7 per 1,000 population); allied special hospitals went from 12.8% in 1971 (1.3 per 1,000 population) to 13.4% in 1972 (1.4 per 1,000 population); tuberculosis sanatoria constituted 1.6% in 1971 (0.2 per 1,000 population) declining to 1.4% in 1972 (0.1 per 1,000 population). Rated beds per 1,000 population for all hospitals as a group remained constant from 1971 to 1972 at 9.9.

Total adult and child admissions to all Canadian hospitals increased 4.2% between 1969 and 1970 reaching in excess of 3.6 million or 168.7 patient admissions per 1,000 population. A study of Table 6.15 reveals that admissions to public general hospitals, the major factor in this rise, increased by 4.4% from 1969 to reach almost 3.3 million in 1970; the number of patient admissions per 1,000 population rose from 147.8 to 152.1. Admissions to public mental hospitals increased 3.2% totalling more than 56,800 in 1970 as admissions per 1,000 population went from 2.6 to 2.7. Over the same period, admissions to public tuberculosis sanatoria dropped by almost 20.0% to 6,000, a decline per 1,000 population from 0.4 to 0.3. The average daily population in all Canadian hospitals decreased 0.3% from 178,559 in 1969 to 177,995 in 1970. Public general hospitals made up slightly more than one half (50.7%) of the 1970 average daily population compared with 49.4% in 1969. Public mental hospitals, the second largest group, accounted for 31.0% of the 1970 average daily population as against 32.5% in 1969. There was considerable variation in percentage occupancy by type of hospital in 1970; private mental hospitals as a group recorded the highest percentage occupancy, 98.6%, and public tuberculosis sanatoria the lowest, 55.8%.

The average length of stay of adults and children in public general hospitals decreased from 10.3 days in 1969 to 10.1 days in 1970 (Table 6.16). Average length of stay was significantly correlated to bed capacity in general hospitals, rising from 7.2 days in the 1-to-24-bed group of non-teaching general hospitals to 12.0 days in full-teaching general hospitals with 500 or more beds, a reflection of the fact that larger hospitals tend to provide more diversified and complex services. Provincially, average length of stay for public general hospitals as a group ranged from 8.8 days in Alberta to 10.8 days in New Brunswick and Quebec. Within the allied special group of hospitals there was considerable variation in the average length of stay, extending from 8.7 days for children's hospitals to 14.4 days for the "other" group (maternity, neurological, orthopedic and cancer hospitals) and then climbing sharply to 45.5 days for the convalescent/rehabilitation hospitals and to 219.7 days for

chronic/extended care hospitals. Average length of stay for public general and allied special hospitals as a whole declined from 11.7 days in 1969 to 11.5 days in 1970.

Table 6.17 shows that there were almost 320,000 full-time employees (excluding paid medical staff in general and allied special hospitals) in the Canadian hospital industry as a whole in 1970. This figure represents an increase of over 3,100 full-time personnel from the 316,825 reported in 1969. General hospitals as a group employed 193.4 full-time personnel per 100 rated beds, a decrease from the comparable group ratio of 199.5 recorded in 1969. Provincially, this ratio varied from 145.5 in Saskatchewan to 227.1 in Quebec in 1970. Taken as a group, general and allied special hospitals reported a ratio of 181.0 full-time personnel per 100 rated beds in 1970 compared to 190.6 in 1969. In mental hospitals there were 79.1 full-time personnel per 100 rated beds in 1970, up from the 75.9 reported in 1969, while in tuberculosis sanatoria this ratio was 86.9 in 1970 as compared to 92.9 in 1969. It is interesting to note that over the past few years the hospital industry has made up more than 4.0% of the Canadian civilian labour force, accounting for 4.3% of this total in 1965 and 4.4% in both 1969 and 1970.

Table 6.18 displays the revenues and expenditures of operating public general hospitals for the reporting years 1969 and 1970. Revenues for these hospitals amounted to \$1,895.8 million in 1970 and expenditures were \$1,969.9 million, both amounts representing a 14.0% increase from the comparable 1969 figures. Salaries and wages accounted for 70.4% of expenditures in 1970 while medical and surgical supplies accounted for 3.3% and drugs for 3.1%.

Generally, salaries of hospital nursing personnel were 19.5% higher in 1970 than in 1968 and varied directly according to academic qualifications. For general-duty registered nurses employed in public general hospitals, the average annual salary varied from \$6,475 for those classified as graduate nurse only, to \$9,705 for those with a master's degree in nursing (Table 6.19). Among graduate nurses without additional qualifications in public general hospitals, directors of nursing education received the highest average salary (\$9,423) and general-duty nurses (not registered) the lowest (\$5,776). On the average, general-duty nurses (registered) without additional qualifications employed in hospitals designated "other" (maternity, neurological, orthopedic and cancer hospitals), earned more (\$6,650) than their counterparts in other types of hospitals.

Table 6.20 shows that cost per patient-day was highest for children's hospitals (\$102.24) in 1970, followed by the "other" hospitals group, which includes orthopedic, maternity, neurological and cancer hospitals (\$84.77), and general hospitals (\$59.74). In the provinces, cost per patient-day in general hospitals ranged from \$39.34 in Prince Edward Island to \$74.52 in Quebec.

6.8.3 Morbidity, notifiable diseases and other health statistics

Hospital morbidity. A growing need for additional information on illness in Canada was met in part by a statistical program first undertaken for 1960 involving separations (discharges and deaths) from general and allied special hospitals. The program provided data on primary diagnosis, days of care, length of illness and age composition for all hospital patients except those in mental hospitals and tuberculosis sanatoria. Age, sex and diagnostic information on persons treated in mental hospitals and in tuberculosis sanatoria has been available at the national level for many years but no similar information has been available for persons treated in other kinds of hospitals. About 140 out of every 1,000 persons are hospitalized during a year and, of these, 96 or 97 are treated in general and allied special hospitals.

It should be noted that the picture of morbidity provided by these statistics is not, of course, complete. A total morbidity picture would include not only the morbidity covered by in-patient hospital care but also out-patient morbidity, morbidity covered by treatment outside the hospitals, and morbidity for which no treatment is received. Nevertheless, the illnesses that receive hospital care are, in general, more serious and more important than the illnesses that do not receive hospital care and this, together with the fact that the diagnostic quality of hospital morbidity statistics is very high, makes hospital morbidity statistics a most important source of information. Tables 6.21 and 6.22 present, for 1969, adult and child patients (excluding newborn) in terms of 17 diagnostic categories (Canadian) which consolidate the much more detailed International Classification of Diseases, Adapted.

There were 1.6 million primary operations performed in general and allied special hospitals in 1969. Data are contained in Table 6.23 and 6.24.

Tuberculosis. There were 3,943 new active and 622 reactivated cases of tuberculosis reported in Canada in 1971 — a total of 4,565 cases. Of 9,610 tuberculosis patients being treated at the end of 1971, 1,894 were hospital patients and 7,716 were being treated by drugs on an out-patient basis. In addition, 11,504 persons received preventive out-patient drug therapy as a safeguard against their developing active forms of the disease. Summary information appears in Table 6.25.

Notifiable diseases. The notifiable diseases most predominant in 1971, as in 1970, were venereal diseases (36,897 cases), rubella (12,567 cases), streptococcal sore throat and scarlet fever (10,814 cases), infectious and serum hepatitis (8,784 cases), and measles (7,454 cases). Table 6.26 shows the number of notifications and the rates per 100,000 of all notifiable diseases, by province, in that year.

Cancer. Statistics Canada started a national cancer incidence reporting system on January 1, 1969, in co-operation with the National Cancer Institute and the nine existing provincial tumour registries; a registry has not yet been organized in Ontario. Participating provinces send a simple notification card with basic patient and diagnostic information for each new primary site of malignant neoplasm discovered. Data provided by this system for 1970 are given in Table 6.27.

Therapeutic abortions. The ten provinces and Yukon Territory reported that hospitals under their jurisdictions performed 18,817 therapeutic abortions during the six-month period January to June 1972, 18,801 of them on patients giving Canada as their place of residence. This was 4,629 more than the 14,188 therapeutic abortions during the same six-month period of 1971. In terms of rates per 100 registered live births, the 18,801 therapeutic abortions reported for Canadian residents amounted to 10.1% of live births for the period January to June 1972, as against an abortion rate of 7.6% of live births for the same period in 1971. The number of therapeutic abortions and abortion rates per 100 live births for Canadian residents by province and by quarter during 1971 and 1972 are shown in Table 6.28.

6.9 Veterans services

The Department of Veterans Affairs administers most of the legislation known collectively as the Veterans Charter and also provides administrative facilities for the Canadian Pension Commission, which administers the Pension Act and Parts I to X of the Civilian War Pensions and Allowances Act; for the War Veterans Allowance Board, which administers the War Veterans Allowance Act and Part XI of the Civilian War Pensions and Allowances Act; and for the Secretary General (Canada) of the Commonwealth War Graves Commission.

The principal benefits now available to veterans are medical treatment for those eligible, land settlement and home construction assistance, education assistance for the children of the war dead, general welfare services, disability and dependants pensions and war veterans allowances. The work of the Department, except the administration of the Veterans' Land Act, is carried out through 18 district offices and four sub-district offices in Canada and one district office in England; the benefits of the Veterans' Land Act are administered through seven regional offices and 26 district offices across Canada.

6.9.1 Pensions and allowances

6.9.1.1 Disability and dependants pensions

Canadian Pension Commission. The Canadian Pension Commission administers the Pension Act (RSC 1970, c.P-7) and Parts I to X of the Civilian War Pensions and Allowances Act (RSC 1970, c.C-20). Members are appointed by the Governor in Council who may also impose upon the Commission duties in respect of any grants in the nature of pensions, etc., made under any statute other than the Pension Act. It reports to Parliament through the Minister of Veterans Affairs. The Commission has district offices in principal cities across Canada with a senior pension medical examiner in charge.

The Pension Act. The evolution of Canada's pension legislation can be traced chronologically through special material usually appearing after major modifications in the laws affecting veterans pensions and through the statistical presentations to be found each year in earlier editions of the *Canada Year Book*. The Pension Act was the subject of major modification in 1971 and details of the principal changes are described in subsequent paragraphs within this Section.

The Pension Act makes provision for the payment of pensions in respect of disability or death resulting from injury or disease incurred during or attributable to service with the Canadian Forces in time of war or peace. Provision is also made for supplementing, up to Canadian rates, awards of pension to or in respect of Canadians for disability or death suffered as a result of service in the British or Allied Forces during World War I or World War II, or payment of pension at Canadian rates in cases where the claim has been rejected by the government of the country concerned.

In 1972, the Pension Act and the Civilian War Pensions and Allowances Act were further amended to provide for annual adjustments in pensions and allowances based on the consumer price index. The increase, effective January 1, 1972, amounted to 3.6% and resulted in basic monthly pension awards of \$302.51 for a pensioner suffering 100% disability, and additional allowances of \$82.88 for the wife of the pensioner, \$39.37 for one child, \$29.01 for a second child, and \$22.79 for the third and each subsequent child. Pension awards to widows and dependants were also increased to monthly payments of \$155.40 for a dependent parent, \$227.92 for a widow and additional payments for children or dependent brothers or sisters at the following rates: \$78.74 for one, \$136.75 for two and \$45.58 for a third or subsequent child or dependent brother or sister. It should be noted that, in general, the rates for orphan children or orphan brothers and sisters are double the rates quoted. Pensionable children of widows who have been awarded pensions are paid at orphan rates. Under provisions of the Pension Act, pensions awarded to parents or brothers or sisters may be less than the maximum figures already quoted.

Amendments to the Pension Act (SC 1970-71, c.31), which received Royal Assent on March 30, 1971, provided many extensive benefits for pensioners and broadened the entire structure of pension legislation. Among the major changes was the provision of an allowance which permits, where merited, the grant of an additional amount of not less than \$800 and not more than \$2,400 a year for those 100% pensioners who suffer an exceptional incapacity.

A basic minimum payment equivalent to pension at the rate of 50% was instituted for all ex-prisoners-of-war of the Japanese who have any assessable disability. In addition, deceased prisoners-of-war of the Japanese, whose death occurred prior to the proclamation of the amendments, will be presumed to have been in receipt of pension at an amount equivalent to 50% at the time of death; thus, all qualified widows and orphans of ex-prisoners of the Japanese are assured pension benefits whether or not death was attributable to service.

Other new provisions include: clarification of entitlement to pension for members of the peacetime forces; broadening of entitlement and increased amounts for clothing allowances; additional pension for loss of a paired limb or organ from any cause whatever; provisions for posthumous assessment, where pension was paid at less than 48%, to determine whether the disability was adequately assessed at that time; provision for a widow or child to continue or to initiate an application for pension in respect of a veteran's disability during lifetime on which he had failed to make application — if this claim can be established and if this raises the pension level to 48% or higher, survivor benefits may then be paid; and new adjudicating processes which will permit all claimants whose applications have been rejected in the past to re-apply to the Commission.

The amended Act authorized the establishment of the Pension Review Board, which has the power to determine any questions of law or fact as to an award and the amount of any such award; the decision of the Board is final and binding. The Board is also the responsible body when matters of interpretation of the Act are at issue. A pension applicant who is dissatisfied with a ruling of the Commission may appeal to the Pension Review Board.

The Civilian War Pensions and Allowances Act, Parts I to X, provides for the payment of pensions to or on behalf of persons who served in certain civilian groups that were closely associated with the war effort during World War II and who suffered injury or death as a result of such service; these include merchant seamen, saltwater fishermen, auxiliary services personnel, ferry pilots of the Armed Forces Transport Command, firefighters who served in Britain, etc.

Important amendments were also made to this Act in 1971. The principal change was to remove the requirement — in the case of merchant seamen and certain others who served in civilian status — that application for pension must be made within one year of the occurrence of the disability concerned. The new special provisions for members of the Forces who were prisoners of the Japanese are now also fully applicable to merchant seamen and other designated civilians.

Details as to the number and type of pensions being paid under the Pension Act as at March 31, 1972 are given in Table 6.29.

6.9.1.2 War Veterans Allowances and Civilian War Allowances

War Veterans Allowance Board. The War Veterans Allowance Board is a quasi-judicial body consisting, at present, of ten members appointed by the Governor in Council. The Board administers the War Veterans Allowance Act and Part XI of the Civilian War Pensions and Allowances Act and reports to Parliament through the Minister of Veterans Affairs. The Board acts as an appeal court for an applicant or recipient aggrieved by a decision of a District Authority and may, on its own motion, review and alter or reverse any adjudication of a District Authority. The Board is also responsible for instructing and guiding the District Authorities in the interpretation of policy and for advising the Minister with respect to regulations concerning the administration of the Act.

War Veterans Allowance District Authorities. In 1950, 18 District Authorities were established in the regional districts of the Department of Veterans Affairs and granted full power to adjudicate on all matters arising under the War Veterans Allowance Act. In 1960, a separate authority — the Foreign Countries District Authority — was established to look after recipients living outside Canada. The members of a District Authority are employees of the Department of Veterans Affairs appointed by the Minister with the approval of the Governor in Council.

War Veterans Allowances. The War Veterans Allowance Act (RSC 1970, c.W-5), provides an allowance to otherwise qualified war veterans who, because of age or infirmity, are no longer able to derive their maintenance from employment and to ensure that their income does not fall below a specified scale. Widows and orphans of qualified veterans are eligible for benefits. Since its inception in 1930, the Act has been amended on 16 different occasions to meet additional needs of veterans and their dependants. The Act was last amended on May 19, 1972 when provision was made for an annual escalated increase in the rates and ceilings in accordance with increases in the consumer price index. The rates and ceilings established to take effect on January 1, 1973 provide for monthly payments of \$131 to a single beneficiary, subject to an annual income ceiling of \$2,052; for a married veteran, the allowance is \$217.61 and the ceiling \$3,451.32; for one orphan \$74.70 and \$1,184.40, for two orphans \$131.00 and \$1,920.00 and for three orphans \$176.47 and \$2,441.64. It should be noted that the ceiling for permissible annual income is raised by \$120 a year if the recipient or spouse is blind.

As at December 31, 1972 a total of 74,719 persons were receiving War Veterans Allowances: 43,875 veterans, 30,518 widows and 326 orphans. Of the total number of beneficiaries, only 683 resided outside Canada. Annual liability for all recipients was estimated at \$77.6 million.

Civilian War Pensions and Allowances. Part XI of the Civilian War Pensions and Allowances Act makes available to certain groups of civilians and their widows and orphans, benefits similar to those available to veterans under the War Veterans Allowance Act. These groups, which performed meritorious service in World War I or World War II, are: Canadian merchant seamen of both wars; non-Canadians who served in Canadian merchant ships in either war; Canadian voluntary aid detachments of World War I; Canadian firefighters of World War II; Canadian welfare workers of World War II; Canadian transatlantic aircrew of World War II; and the Newfoundland Overseas Forestry Unit of World War II.

At December 31, 1972, 2,638 civilians, 651 widows and 12 orphans were in receipt of Civilian War Allowances, for a total of 3,301 of whom only five resided outside of Canada. Annual liability was estimated at \$4.7 million.

6.9.1.3 Bureau of Pensions Advocates

The Bureau of Pensions Advocates was established under the Minister of Veterans Affairs by the amendments to the Pension Act 1971 (SC 1970-71, c.31), effective March 30, 1971. It succeeds the Veterans Bureau which had been in operation since 1930. The Bureau is not part of the Department of Veterans Affairs, but provides an independent professional legal aid service to applicants for awards under the Pension Act. The Chief Pensions Advocate is the Chief Executive Officer and is assisted by pensions advocates, all of whom are lawyers, located at the Bureau's head office in Ottawa and in district offices in major centres across Canada. Pensions Advocates represent applicants as counsel at Entitlement Board and Pension Review

Board hearings and provide a general counselling service to applicants relative to their claims under the Pension Act. No charge is made for the services of the Bureau.

Statistics are not available for the new Bureau of Pensions Advocates but in its last year the Veterans Bureau presented 5,736 claims to the Canadian Pension Commission for adjudication of which 42% were wholly or partially granted.

6.9.2 Welfare and treatment services

6.9.2.1 Welfare services

Welfare services for veterans and, where appropriate, their dependants are provided by the Welfare Services Branch. These include the administration of assigned statutes; the conducting of field work and reporting for other branches of the Department, and the Canadian Pension Commission, the War Veterans Allowance Board and Services Benevolent Funds; and the provision of a rehabilitation and welfare program of advice and counselling including referral, where indicated, to other public or private agencies, veterans organizations, etc.

Assistance fund. Recipients of benefits under the War Veterans Allowance Act and Part XI of the Civilian War Pensions and Allowances Act living in Canada may be given help from the assistance fund if their total income is lower than the permitted maximum. Assistance may take the form of a monthly supplement based on shelter, fuel, food, clothing, personal care and specified health costs or of a single award to meet an unusual or emergency need. The number of persons assisted in the year ended March 31, 1972, was 21,728, the number in receipt of monthly supplements at the end of 1972 was 17,471 and fund expenditures to March 31, 1972, amounted to \$8.3 million.

Education assistance to children. The Children of War Dead (Education Assistance) Act provides help in the form of allowances and the payment of fees for the post-secondary education of children of persons whose deaths have been attributed to military service. Assistance is restricted to children attending, in Canada, educational institutions that require secondary school graduation, matriculation or equivalent standing for admission, including, in addition to universities and colleges, such facilities as hospital schools of teaching and institutes of technology. From its inception in July 1953 to March 31, 1972, expenditures totalled \$10.9 million of which \$6 million was spent in allowances and \$4.9 million in fees. By the end of March 1972, training had been approved for 5,854 children of Canada's war dead; of these, 2,557 had successfully completed training. At the same date, there were 877 students in university and non-university courses receiving assistance.

Veterans insurance. Under the terms of the Returned Soldiers Insurance Act (SC 1920, c.54 as amended), any one veteran of World War I became eligible to contract for life insurance with the federal government for a maximum of \$5,000. No policies have been issued under this Act since August 31, 1933. During the eight years in which the Act was open, 48,319 policies with a face value of \$109.3 million were issued. On December 31, 1971, 3,865 policies with a value of \$8.4 million were still in force.

The Veterans Insurance Act (RSC 1970, c.V-3) made life insurance up to a maximum of \$10,000 available to veterans of World War II on their discharge as well as to widows of those who died during that war. The Veterans Benefit Act of 1954 extended this eligibility to veterans with active service in Korea. The period of eligibility to apply for this insurance ended October 31, 1968. By that date 56,148 policies amounting to \$185.1 million had been issued and, of these, 22,745 policies with a value of \$73 million were still in force on December 31, 1971.

Rehabilitation and welfare. Welfare officers at district offices work closely with other branches of the Department, with other public agencies at all levels and with private agencies and organizations in assisting veterans and their dependants to deal with problems of social adjustment, particularly those associated with physical disabilities or the disabilities of increasing age. The latter occur more frequently, of course, as the age of the veteran population increases. A program of university, vocational, technical and home training with allowances, is provided for disabled pensioned veterans and vocational rehabilitation is also promoted by training assistance. Sheltered workshops at Toronto and Montreal and home assembly work in other centres produce poppies and memorial wreaths associated with Remembrance Day observances.

Services benevolent and welfare funds. Veterans and their dependants receive considerable assistance through various services benevolent funds. All of these organizations work closely together and in co-operation with the Department of Veterans Affairs and veterans organizations. In addition to providing cash grants or loans as detailed below, all organizations for serving or ex-service personnel carry out increasingly heavy counselling work, particularly in the field of debt consolidation and management.

The oldest of the services funds, the Royal Canadian Navy Benevolent Fund, was incorporated in 1942 and derived its original capital from undistributed prize monies accrued during World War I. In the year ended March 31, 1972, it approved 383 applications for loans or grants totalling \$204,628. The Royal Canadian Air Force Benevolent Fund was established in 1944 using assets from disbanded units of the Commonwealth Air Training Plan. Loans or grants totalling \$301,838 were made in 1,214 cases during the year ended March 31, 1972. The Army Benevolent Fund was set up by Act of Parliament in 1947 and is administered by a Board appointed by the Governor in Council. It is the only one of the Funds required to report annually to Parliament (through the Minister of Veterans Affairs). Capital for this Fund was derived from army canteen and mess funds accumulated during World War II. No provision was made in its charter for loan assistance and it is further restricted in that its operations extend only to persons who were on active service in the Canadian Army during World War II and their dependants. During the year ended March 31, 1972, 3,692 cases received \$417,494 in grants under its Veterans Welfare Programme.

In 1950, the Canadian Army Welfare Fund was incorporated to make assistance available to personnel (and their dependants) enlisting in the Army after World War II and who were thus ineligible for help under the three existing Funds. While addressing itself primarily to the small-loan field for serving personnel, an amount of \$50,000 is set aside annually for distress grants. Following unification of the Forces, and because of a variety of legal complications precluding amalgamation of the existing Funds, a fifth, the Canadian Forces Personnel Assistance Fund was incorporated. Its primary role at the present time is in the field of small low-cost loans for serving personnel enlisting after February 1968. The grant and financial distress loan aspects of this program are expected to take on increasing importance as the years pass. Administration of the two last-named Funds is carried out on contract through the office of the Army Benevolent Fund Board.

6.9.2.2 Treatment services

The Treatment Services Branch of the Department of Veterans Affairs provides medical and dental services for entitled veterans throughout Canada as well as for members of the Armed Forces, the Royal Canadian Mounted Police and the wards of other governments or departments at the request and expense of the authorities concerned. Prosthetic services are provided to entitled veterans by the Department of National Health and Welfare but paid for by the Department of Veterans Affairs (DVA).

The Branch provides examination and treatment for pensionable disabilities, and provides treatment to war veterans allowance recipients (but not to their dependants) and veterans whose service and financial circumstances render them eligible for free treatment or at a cost adjusted to their ability to pay. If a bed is available, any veteran may receive treatment in a departmental hospital on a guarantee of payment of the cost of hospitalization. The pensioner receives treatment for his pensionable disabilities regardless of his place of residence but service to other veterans is available in Canada only. Subject to the approval of the Department, an eligible veteran may also obtain treatment at the expense of the Department in an outside hospital from a doctor of his choice. Domiciliary care may be provided to eligible veterans in departmental facilities where the need for active or chronic treatment is sufficiently light, provided that excess beds are available.

Under the federal-provincial hospital insurance program, DVA hospitals are recognized for the provision of insured services to veterans. Where treatment is given for a non-pensioned condition at a DVA hospital to a veteran, or elsewhere to a veteran eligible under the veterans treatment regulations, the hospitalization is an insured service under the federal-provincial hospital insurance program and his medical care is an insured service under the federal-provincial medical care insurance program. The Department pays premiums where required on behalf of veterans who are eligible for war veterans allowance.

Hospital facilities. Treatment is provided in eight active treatment hospitals located at Halifax, NS; Montreal and Ste. Anne de Bellevue, Que.; London, Ont.; Winnipeg, Man.; Calgary, Alta.; and Vancouver and Victoria, BC; and in three domiciliary care homes at Ottawa, Ont., Saskatoon, Sask. and Edmonton, Alta. The rated bed capacity of these institutions at December 31, 1970 was 6,005 beds. It should also be noted that in Ottawa both acute and chronic cases requiring definitive treatment are admitted to the National Defence Medical Centre. A veterans pavilion of 67 beds is located at St. John's General Hospital, St. John's, Nfld., 1,200 beds are available at Sunnybrook Hospital in Toronto, 150 beds at the Centre Hospitalier de l'Université Laval in Quebec and 200 beds at West Saint John Community Hospital in Saint John, NB, for the priority use of veterans, as well as some 500 beds in community hospitals located in St. John's, Nfld., Charlottetown, PEI, Kingston, Ont., Regina and Saskatoon, Sask. and Edmonton, Alta.

Medical staff and training programs. The active and consulting medical staffs of departmental hospitals are usually private practitioners and specialists who also hold teaching appointments on the medical faculties of local universities. Their appointment and selection is normally recommended by the Deans of Medicine of the universities with which the departmental hospitals are affiliated. This affiliation results in approval by the Royal College of Physicians and Surgeons of Canada for postgraduate teaching in resident teaching programs of non-core years in medicine, surgery, psychiatry and other specialties. Some departmental hospitals are also affiliated with technical schools and act as hospital teaching units in technical school programs for paramedical sciences such as laboratory and radiology technicians. In addition, residency training programs are given in psychology, dietetics, physiotherapy and occupational therapy, and in the medical social services at both the undergraduate and graduate levels. A postgraduate residency program in hospital pharmacology and pharmacy methodology is conducted at Westminster Hospital, London, Ont. At Camp Hill Hospital in Halifax, Shaughnessy Hospital in Vancouver, Deer Lodge in Winnipeg, and Westminster Hospital in London, the Department is affiliated with the university medical school in the undergraduate clinical teaching program, in addition to participating in graduate residency training.

6.9.3 Land settlement and house construction

The Veterans' Land Act, 1942, as amended, provides financial, technical and supervisory assistance to World War II and Korean Force veterans, to enable them to engage in agriculture or commercial fishing on a full-time basis; to acquire, build or improve homes; and to settle on provincial, federal and Indian reserve land. Loans may be made of up to \$40,000 for full-time farmers on economic farm units, to \$18,000 for small family farmers, to \$16,000 for small holders (part-time farmers) and to \$18,000 for veterans building houses on city-size lots. The financial assistance available under the Act is generally comparable to that available to non-veterans under the Farm Credit Act and the National Housing Act.

From inception of the Act to December 31, 1972, 129,603 veterans were settled under the provisions of the Act; 31,477 were established as full-time farmers, 84,897 as small holders, 5,684 as Crown land settlers, 1,426 as commercial fishermen, 1,781 Indian veterans were established on reservations and 4,337 veterans acted as their own contractors in building homes on city-size lots. Subsequent to settlement, 19,294 farmers and 18,246 small holders and commercial fishermen were given additional loans. In 1972, loans amounting to over \$49.8 million were approved on behalf of 3,302 veterans. From inception of operations to the end of 1972, \$1,146.4 million was spent on repayable loans, advances and non-repayable grants and 67,775 veterans had earned conditional grants of \$121.1 million. By the end of that year, 53,208 of them had successfully completed their settlement contracts — 17,410 farmers, 28,729 small holders, 683 commercial fishermen, 4,722 Crown land settlers, and 1,664 Indian veterans on reservations.

Field officers, highly trained in the techniques pertaining to agriculture, construction and land appraisals, provide advisory, supervisory and appraisal field services. During 1972, 3,631 properties were appraised, including 184 for the Indian Off-Reserve and Eskimo Housing Program and 51 special assignments carried out on behalf of other government departments and agencies. Altogether, 578 new houses were started — 562 for small holders and commercial fishermen, nine farm homes and seven on city-size lots — and 586 new houses were completed.

During the fiscal year 1970-71, instalments falling due on properties purchased by veterans under the Act amounted to \$39.7 million, excluding share-of-crop payments; over 92.1% of the total amount due was collected and 773 veterans under share-of-crop agreements paid \$1.6 million.

By December 31, 1972, 18,335 veterans were insured under Veterans' Land Act group life insurance for \$185.3 million. Since inception of the group plan, 376 insured veterans have died and \$2.8 million has been spent to pay off their loans.

6.9.4 Commonwealth War Graves Commission

The current Charters of the Commonwealth War Graves Commission consist of two documents — the Original Charter of Incorporation dated May 21, 1917, and the new Supplemental Charter dated June 8, 1964. Under these Charters the Commission is entrusted with the marking and maintenance in perpetuity of the graves of those of the British Empire and Commonwealth Armed Forces who lost their lives between August 4, 1914 and August 31, 1921, and between September 3, 1939, and December 31, 1947, and with the erection of memorials to commemorate those with no known grave.

The Canadian High Commissioner in London, England, is the official Commission member for Canada and the Minister of Veterans Affairs is the Agent of the Commission in Canada. The office of the Secretary-General of the Canadian Agency is in the Veterans Affairs Building, Ottawa.

Sources

- 6.1 - 6.3 Health Economics and Statistics, Health Programs Branch, Department of National Health and Welfare; Medical Research Council.
- 6.4 - 6.8.1 Research, Planning and Evaluation (Welfare) Branch, Department of National Health and Welfare.
- 6.8.2 Health and Welfare Division, Institutional and Public Finance Statistics Branch, Statistics Canada.
- 6.9 Public Relations, Department of Veterans Affairs; Pension Review Board.

Tables

... not available
 ... not appropriate or not applicable
 — nil or zero
 -- too small to be expressed

e estimate
 p preliminary
 r revised
 certain tables may not add due to rounding

6.1 Physicians and population per physician, 1901-71, and by province, 1971

Source and year	Active civilian physicians		Province or territory	Active civilian physicians	
	Number	Population per physician		Number	Population per physician
Census data ¹			1971		
1901 (June 1)	5,475	972	Newfoundland	479	1,102
1911 "	7,411	970	Prince Edward Island	98	1,143
1921 "	8,706	1,008	Nova Scotia	1,081	734
1931 "	10,020	1,034	New Brunswick	609	1,051
1941 "	10,723	1,072	Quebec	9,138	661
1951 "	14,325	976	Ontario	12,506	622
1961 "	21,290	857	Manitoba	1,533	645
			Saskatchewan	1,128	815
Department of National Health and Welfare ²			Alberta	2,384	690
1962 (Dec. 31)	23,248	808 ³	British Columbia	3,624	615
1963 "	24,082	795	Yukon Territory	17	1,118
1964 "	24,847	785	Northwest Territories	28	1,286
1965 "	25,481	779			
1966 "	26,528	763	Canada	32,625	666
1967 "	27,544	747			
1968 "	28,163	742			
1969 ⁴ "	29,659	714			
1970 ⁴ "	31,166	689			
1971 ⁴ "	32,625	666			

¹ Excludes Yukon Territory and Northwest Territories from 1901 to 1951.

² Estimates for 1962 to 1968 for interns and residents are based on Statistics Canada data, and for other active civilian physicians, on the data of *List catalogue*, Canadian Mailings Limited (Seccombe House).

³ Population-physician rate calculated on the basis of Statistics Canada estimates of the population as at Jan. 1 of the following year.

⁴ Produced by the Department of National Health and Welfare from information supplied by Medical Marketing Systems Limited (Seccombe House).

6.2 Beneficiaries under the Canada Pension Plan, by type of benefit and by province, March 1972

Province or territory	Retirement pensions	Disability benefits		Survivors benefits			Combined pensions	All benefits
		Disability pensions	Children's benefits	Death benefits	Widows pensions	Orphans benefits		
Newfoundland	3,378	335	448	50	1,013	1,627	—	6,855
Prince Edward Island	1,325	86	101	15	298	438	—	2,267
Nova Scotia	9,860	1,570	1,364	99	2,722	3,210	3	18,844
New Brunswick	7,453	564	507	72	1,963	2,622	—	13,195
Quebec	860	59	45	9	377	477	1	1,833
Ontario	113,916	5,888	3,624	945	27,552	24,153	14	176,473
Manitoba	16,053	685	348	153	3,243	3,034	2	23,562
Saskatchewan	12,639	573	505	117	2,939	3,031	4	19,832
Alberta	19,142	729	482	188	4,390	4,988	5	29,976
British Columbia	33,566	1,350	656	256	6,802	6,512	5	49,221
Yukon Territory	86	2	—	4	40	55	—	188
Northwest Territories	45	1	—	3	22	55	—	126
Canada	218,323	11,842	8,080	1,911	51,361	50,202	34	342,372

6.3 Canada Pension Plan account, years ended Mar. 31, 1968-72 (million dollars)

Year	Revenue				Net expenditure			Excess of revenue	Balance in account
	Contributions	Interest on investments	Other	Total	Benefits	Administration	Total		
1968	640.2	42.2	2.2	684.7	1.3	11.5	12.8	671.9	1,352.8
1969	697.6	84.4	3.0	785.0	15.6	14.5	30.0	755.0	2,107.8
1970	745.6	139.7	4.2	889.6	47.3	17.7	65.1	824.5	2,932.3
1971	812.9	202.7	4.5	1,020.1	89.2	19.5	108.7	911.3	3,843.6
1972	825.9	272.6	3.5	1,102.1	144.4	22.9	167.3	934.9	4,778.5

6.4 Canada Pension Plan Investment Fund investments, by province, years ended Mar. 31, 1966-72 (million dollars)

Securities of or guaranteed by	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71	1971-72	Total investments
Newfoundland	0.7	11.0	12.0	14.2	15.6	16.8	17.6	87.9
Prince Edward Island	0.1	1.9	2.3	2.9	3.2	3.5	3.6	17.5
Nova Scotia	1.2	21.4	25.2	29.2	31.6	34.0	35.7	178.5
New Brunswick	1.0	16.7	19.3	21.8	24.2	25.8	26.8	135.6
Quebec	—	0.4	1.9	2.4	3.1	5.1	6.6	19.4
Ontario	20.1	332.6	375.9	412.0	445.8	476.0	498.3	2,560.7
Manitoba	2.1	34.9	39.4	42.3	47.7	51.5	53.7	271.5
Saskatchewan	1.4	24.5	29.7	35.9	40.4	42.9	42.7	217.4
Alberta	3.1	51.1	59.2	68.4	77.1	82.3	87.1	428.3
British Columbia	5.1	84.4	96.6	107.5	117.2	125.1	131.2	667.1
Federal government	0.1	1.8	3.8	5.6	4.1	5.4	6.5	27.4
Total investments	34.9	580.7	665.3	742.2	809.8	868.5	910.0	4,611.3
Balance in Fund	34.9	615.5	1,280.8	2,022.9	2,832.7	3,701.3	4,611.3	...

6.5 Old age security and guaranteed income supplement statistics, by province, year ended Mar. 31, 1972 with totals for 1968-72

Province or territory	Old age security		Guaranteed income supplement	
	Pensioners in March	Net pensions paid during fiscal year \$	Pensioners in March	Net supplements paid during fiscal year \$
Newfoundland		32,672		15,959,610
Prince Edward Island		12,449		5,278,248
Nova Scotia		73,048		27,585,325
New Brunswick		54,835		20,169,749
Quebec		422,258		145,391,555
Ontario		648,918		155,042,845
Manitoba		96,982		31,158,339
Saskatchewan		95,316		30,044,196
Alberta		119,044		37,985,821
British Columbia		205,937		56,736,573
Yukon Territory		506		216,839
Northwest Territories		869		490,472
Canada	1972	1,762,834	974,375	526,059,572
	1971	1,720,128	860,392	280,005,371
	1970	1,670,639	812,835	263,478,628
	1969	1,504,862	775,034	244,470,268
	1968	1,366,210	714,648	234,835,151

6.6 Number and percentage of old age security (OAS) pensioners with or without guaranteed income supplement (GIS), by province, May 1972

Province or territory	Number of OAS pensioners			Percentage of OAS pensioners		
	Without GIS	With partial GIS	With full GIS	Without GIS	With partial GIS	With full GIS
Newfoundland	5,542	7,508	19,656	16.9	23.0	60.1
Prince Edward Island	2,964	4,266	5,209	23.8	34.3	41.9
Nova Scotia	24,914	21,287	27,004	34.0	29.1	36.9
New Brunswick	18,448	15,427	21,251	33.5	28.0	38.5
Quebec	169,165	109,089	146,411	39.8	25.7	34.5
Ontario	353,868	170,597	127,995	54.2	26.1	19.6
Manitoba	40,847	28,976	26,752	42.3	30.0	27.7
Saskatchewan	40,665	29,375	25,730	42.5	30.7	26.8
Alberta	51,543	35,384	32,962	43.0	29.5	27.5
British Columbia	100,460	57,792	48,203	48.7	28.0	23.3
Yukon Territory	210	76	224	41.2	14.9	43.9
Northwest Territories	157	103	603	18.2	11.9	69.9
Canada	808,783	479,880	482,000	45.7	27.1	27.2

6.7 Family allowances statistics, by province, year ended Mar. 31, 1972 with totals for 1968-72

Province or territory	Families receiving allowances in March	Children for whom allowances paid in March	Average number of children per family in March	Average allowance ¹		Net total allowances paid during fiscal year \$
				Per family \$	Per child \$	
Newfoundland	78,708	209,340	2.66	17.98	6.76	16,946,156
Prince Edward Island	14,832	37,280	2.51	17.26	6.89	3,079,514
Nova Scotia	111,549	253,050	2.27	15.54	6.85	20,892,428
New Brunswick	89,290	214,813	2.41	16.46	6.83	17,687,390
Quebec	851,494	1,873,460	2.20	15.17	6.90	156,175,797

6.7 Family allowances statistics, by province, year ended Mar. 31, 1972 with totals for 1968-72 (concluded)

Province or territory	Families receiving allowances in March	Children for whom allowances paid in March	Average number of children per family in March	Average allowance ¹ Per family \$	Per child \$	Net total allowances paid during fiscal year \$
Ontario	1,102,786	2,382,305	2.16	14.46	6.69	191,377,140
Manitoba	134,680	303,199	2.25	15.26	6.78	24,747,960
Saskatchewan	123,900	294,058	2.37	16.12	6.80	24,266,040
Alberta	240,768	543,434	2.26	15.35	6.79	44,345,011
British Columbia	306,448	649,548	2.12	14.54	6.86	53,086,023
Yukon Territory	2,926	6,375	2.18	15.45	7.09	540,508
Northwest Territories	5,906	15,835	2.68	18.23	6.80	1,263,366
Canada	3,063,287	6,782,697	2.21	15.04	6.81	554,407,333
1971	3,024,423	6,824,479	2.26	15.37	6.80	557,877,821
1970	2,977,556	6,865,302	2.31	15.68	6.79	560,049,848
1969	2,937,084	6,882,900	2.34	15.93	6.81	560,186,052
1968	2,888,101	6,901,486	2.39	16.19	6.77	558,774,458

¹ Based on gross payment for March.**6.8 Summary statistics, federal youth allowances, by province, year ended Mar. 31, 1972 with totals for 1968-72**

Province or territory	Youths for whom allowances paid in March			Net total allowances paid during fiscal year \$
	Attending school full-time	Having physical or mental infirmity	Total	
Newfoundland	18,728	148	18,876	2,116,573
Prince Edward Island	3,943	10	3,953	452,118
Nova Scotia	27,887	123	28,010	3,256,486
New Brunswick	23,702	88	23,790	2,746,322
Ontario	247,151	1,043	248,194	28,855,752
Manitoba	32,674	28	32,702	3,799,844
Saskatchewan	34,073	59	34,132	3,941,375
Alberta	56,150	113	56,263	6,447,382
British Columbia	69,179	173	69,352	7,921,557
Yukon Territory	417	1	418	47,548
Northwest Territories	561	2	563	69,050
Total				
1972	514,465	1,788	516,253	59,654,007
1971	507,057	1,903	508,960	58,020,099
1970	482,400	2,076	484,476	55,101,899
1969	460,055	2,330	462,385	52,457,272
1968	432,051	2,514	434,565	49,426,980

6.9 Canada Assistance Plan: recipients of social allowances, by province, March 1972

Province and program	Cases			Total ¹	Dependents	Total recipients ^{1,2}
	Single persons	Family heads	Unclassified			
NEWFOUNDLAND	8,481	15,530	—	24,011	56,563	80,574
Long term	5,979	10,029	—	16,008	32,031	48,039
Short term	2,502	5,501	—	8,003	24,532	32,535
PRINCE EDWARD ISLAND	2,423	3,653	—	6,076	9,837	15,913
NOVA SCOTIA	12,376	10,212	—	22,588	29,690	52,278
Provincial	8,435	5,514	—	13,949	14,945	28,894
Municipal	3,941	4,698	—	8,639	14,745	23,384
NEW BRUNSWICK	6,017	11,798	—	17,815	43,902	61,717
Long term	4,159	6,722	—	10,881	22,543	33,424
Short term	1,858	5,076	—	6,934	21,359	28,293
QUEBEC	—	—	189,777	189,777	272,794	462,571
ONTARIO	39,506	28,969	79,635	148,110	185,474	333,584
Family benefits (provincial)	—	—	79,635	79,635	107,611	187,246
General welfare (municipal)	39,506	28,969	—	68,475	77,863	146,338
MANITOBA	3,805	3,042	29,462	36,309	42,235	78,544
Provincial	—	—	29,462	29,462	32,408	61,870
Municipal	3,805	3,042	—	6,847	9,827	16,674
SASKATCHEWAN	—	—	23,185	23,185	46,419	69,604
ALBERTA	13,525	20,402	—	33,927	55,056	88,983
Provincial	12,343	18,150	—	30,493	49,057	79,550
Municipal	1,182	2,252	—	3,434	5,999	9,433
BRITISH COLUMBIA	48,036	24,243	—	72,279	61,919	134,198
Social allowances	28,313	24,243	—	52,556	61,919	114,475
Supplementary social allowances	19,723	—	—	19,723	—	19,723
Total	134,169	117,849	322,059	574,077	803,889	1,377,966

¹ Includes some individuals in institutions in some provinces.² Includes dependants; there is some duplication where recipients receive benefits under more than one program.

6.10 Federal share of Canada Assistance Plan costs¹, by province, years ended Mar. 31, 1971 and 1972 (dollars)

Province	1970-71	1971-72	Province or territory	1970-71	1971-72
Newfoundland	21,966,470	25,558,567	Manitoba	28,187,315	36,304,036
Prince Edward Island	3,766,197	4,040,832	Saskatchewan	20,621,117	25,306,573
Nova Scotia	16,743,286	21,857,283	Alberta	39,191,982	42,808,250
New Brunswick	15,242,214	20,228,516	British Columbia	68,207,041	68,563,426
Quebec			Yukon Territory	771,248	295,782
Ontario	176,163,385	211,035,023	Total	390,860,255	455,998,288

¹ Includes public assistance payments, child welfare maintenance, maintenance of persons in welfare institutions (such as homes for the aged), health care and extensions and improvements in welfare services and also payments made for claims received during the fiscal year for expenditures made in the previous fiscal year.

² Compensation is made to Quebec under the terms of the Established Programs (Interim Arrangements) Act. Payments in 1970-71 and 1971-72 amounted to \$203.3 million and \$267.4 million (estimated), respectively.

6.11 Blind and disabled persons allowances, by province, years ended Mar. 31, 1971 and 1972

Province or territory and year		Allowances for the blind			Allowances for the disabled		
		Recipients in month of March	Average monthly allowance \$	Federal contribution during year \$	Recipients in month of March	Average monthly allowance \$	Federal contribution during year \$
Newfoundland	1971	374	73.20	247,457	43	60.59	17,150
	1972	352	73.97	237,807	32	55.93	11,861
Prince Edward Island	1971	50	74.46	33,159	28	69.28	13,008
	1972	46	74.39	31,536	7	70.97	4,841
Nova Scotia	1971	511	72.71	339,401	494	70.38	223,202
	1972	474	73.28	324,426	359	69.76	169,477
New Brunswick	1971	424	73.75	289,364	2,068	74.40	957,365
	1972	397	73.72	271,601	1,972	74.37	901,210
Quebec	1971	1,554	73.52	1	10,876	74.20	1
	1972	636	73.50	1	2,340	65.00	1
Ontario	1971	183	48.08	81,266	445	66.19	213,973
	1972	152	49.47	73,246	310	65.93	138,534
Manitoba	1971	169	70.19	129,469	463	72.19	282,817
	1972	147	66.77	97,193	330	71.43	157,809
Saskatchewan	1971	54	74.18	38,991	91	70.21	39,512
	1972	43	73.95	28,390	75	70.88	29,172
Alberta	1971	234	73.61	164,573	1,479	73.49	677,905
	1972	209	73.33	146,150	1,388	73.33	628,201
British Columbia	1971	432	73.89	286,126	2,580	73.85	1,126,363
	1972	429	73.42	283,789	2,618	73.83	1,143,706
Yukon Territory	1971	4	75.00	2,700	6	75.00	2,250
	1972	5	75.00	2,981	5	75.00	2,588
Northwest Territories	1971	26	75.00	19,125	35	74.17	15,282
	1972	26	75.00	17,089	32	74.56	15,831
Canada	1971	4,015	72.38	1,631,630 ¹	18,608	73.50	3,568,829 ¹
	1972	2,916	72.07	1,514,208 ¹	9,468	70.05	3,203,230 ¹

¹ Excludes Quebec. Effective Jan. 1, 1965 no payments were made to Quebec under these programs; instead, compensation was provided under the Established Programs (Interim Arrangements) Act. If payments had been made under these programs, however, total amounts for 1970-71 and 1971-72 would have been increased as follows: allowances for the blind — \$1,228,295 and \$448,359, respectively; and allowances for disabled persons — \$6,139,972 and \$1,860,693, respectively.

6.12 Total, per capita and percentage distribution of government expenditure on health and social welfare, by level of government, years ended Mar. 31, 1963-71

Year	Federal	Provincial	Municipal	Total
Total expenditure (million dollars)				
1963	2,683.5	1,097.7	117.3	3,898.5
1964	2,801.0	1,166.8	101.2	4,069.1
1965	2,969.7	1,376.1	108.2	4,454.0
1966	2,883.5	1,714.3	129.6	4,727.4
1967	3,243.6	2,013.8	127.0	5,384.4
1968	3,915.5	2,391.1	138.2	6,444.9
1969	4,413.5	2,725.0	158.0	7,296.5
1970 ¹	5,057.5	3,308.5	181.5	8,547.5
1971 ¹	5,796.2	4,017.3	213.5	10,027.0

Per capita expenditure (dollars)

1963	143.44	58.68	6.27	208.39
1964	146.95	61.22	5.31	213.48
1965	152.92	70.86	5.77	229.35
1966	145.80	86.68	6.56	239.04
1967	160.88	99.90	6.30	267.08
1968	190.55	116.37	6.73	313.65
1969	211.61	130.65	7.57	349.83
1970 ¹	238.79	156.21	8.57	403.57
1971 ¹	269.59	186.85	9.93	466.37

6.12 Total, per capita and percentage distribution of government expenditure on health and social welfare, by level of government, years ended Mar. 31, 1963-71 (concluded)

Year	Federal	Provincial	Municipal	Total
Percentage distribution				
1963	68.8	28.2	3.0	100.0
1964	68.8	28.7	2.5	100.0
1965	66.7	30.9	2.4	100.0
1966	61.0	36.3	2.7	100.0
1967	60.2	37.4	2.4	100.0
1968	60.8	37.1	2.1	100.0
1969	60.5	37.3	2.2	100.0
1970 ¹	59.2	38.7	2.1	100.0
1971 ¹	57.8	40.1	2.1	100.0

¹ Includes or based on estimated data.

6.13 Number and bed capacity of operating public, private and federal hospitals 1970-72

Type	1970 ¹		1971 ²		1972 ²	
	Hospitals	Beds	Hospitals	Beds	Hospitals	Beds
General	920	121,130	925	121,009	918	123,071
Allied special	342	27,790	343	27,055	355	28,764
Mental	119	60,200	121	60,357	125	59,553
Tuberculosis	25	3,301	27	3,378	24	2,908
Total	1,406	212,421	1,416	211,799	1,422	214,296

¹ As at Dec. 31.

² As at Jan. 1.

6.14 Number and bed capacity of operating public, private and federal hospitals, by province and type, as at Jan. 1, 1972

Province or territory and category	Type of hospital								
	General			Allied special			Total, general and allied special		
	Hos-pitals	Beds	Beds per 1,000 population ¹	Hos-pitals	Beds	Beds per 1,000 population ¹	Hos-pitals	Beds	Beds per 1,000 population ¹
Newfoundland									
Public	33	2,471	4.7	14	511	1.0	47	2,982	5.6
Private	—	—	—	—	—	—	—	—	—
Federal	—	—	—	—	—	—	—	—	—
Prince Edward Island									
Public	8	714	6.4	1	30	0.3	9	744	6.6
Private	—	—	—	—	—	—	—	—	—
Federal	—	—	—	—	—	—	—	—	—
Nova Scotia									
Public	43	4,269	5.4	4	529	0.7	47	4,798	6.1
Private	1	5	—	—	—	—	1	5	—
Federal	2	553	0.7	—	—	—	2	553	0.7
New Brunswick									
Public	37	4,214	6.6	2	105	0.2	39	4,319	6.7
Private	—	—	—	—	—	—	—	—	—
Federal	1	300	0.5	—	—	—	1	300	0.5
Quebec									
Public	127	27,375	4.5	61	9,367	1.5	188	36,742	6.1
Private	14	544	0.1	44	2,419	0.4	58	2,963	0.5
Federal	1	400	0.1	8	1,082	0.2	9	1,482	0.2
Ontario									
Public	188	42,259	5.4	41	6,291	0.8	229	48,550	6.2
Private	9	216	—	54	1,198	0.2	63	1,414	0.2
Federal	5	1,769	0.2	8	32	—	13	1,801	0.2
Manitoba									
Public	79	5,090	5.1	5	1,185	1.2	84	6,275	6.3
Private	2	30	—	1	50	0.1	3	80	0.1
Federal	3	673	0.7	14	51	0.1	17	724	0.7
Saskatchewan									
Public	133	6,678	7.3	8	929	1.0	141	7,607	8.3
Private	—	—	—	—	—	—	—	—	—
Federal	2	112	0.1	1	4	—	3	116	0.1
Alberta									
Public	116	10,869	6.6	29	3,185	1.9	145	14,054	8.5
Private	—	—	—	—	—	—	—	—	—
Federal	5	910	0.6	3	12	—	8	922	0.6
British Columbia									
Public	90	11,556	5.2	23	1,651	0.7	113	13,207	5.9
Private	3	34	—	—	—	—	3	34	—
Federal	3	1,516	0.7	—	—	—	3	1,516	0.7

6.15 Movement of patients¹ and patient-days in operating public, private and federal hospitals, 1969 and 1970

Type of service and item	1969	1970	Type of service and item	1969	1970
PUBLIC HOSPITALS					
General			Patient-days	299,058	278,861
Beds set up at Dec. 31	111,571	113,440	Per 1,000 population	14.2	13.0
Admissions	3,112,596	3,250,591	Av. daily no. of patients	814.3	764.0
Per 1,000 population	147.8	152.1	Per 1,000 population	—	—
Patient-days	32,223,515	32,962,756	Percentage occupancy ²	78.0	80.7
Per 1,000 population	1,530.0	1,542.0	Allied special		
Av. daily no. of patients	88,276.8	90,308.9	Beds set up at Dec. 31	4,037	4,196
Per 1,000 population	4.2	4.2	Admissions	13,456	14,140
Percentage occupancy ²	79.4	79.6	Per 1,000 population	0.6	0.7
Allied special			Patient-days	1,340,477	1,405,072
Beds set up at Dec. 31	20,727	21,692	Per 1,000 population	63.6	65.7
Admissions	172,931	179,450	Av. daily no. of patients	3,745.1	3,849.5
Per 1,000 population	8.2	8.4	Per 1,000 population	0.2	0.2
Patient-days	6,732,031	7,079,302	Percentage occupancy ²	92.5	91.1
Per 1,000 population	319.6	331.2	Mental		
Av. daily no. of patients	18,443.9	19,395.3	Beds set up at Dec. 31	948	955
Per 1,000 population	0.9	0.9	Admissions	3,533	3,527
Percentage occupancy ²	87.3	87.3	Per 1,000 population	0.2	0.2
Mental			Patient-days	338,600	336,736
Beds set up at Dec. 31	61,542	58,990	Per 1,000 population	16.1	15.8
Admissions	55,092	56,848	Av. daily no. of patients	927.7	922.6
Per 1,000 population	2.6	2.7	Per 1,000 population	—	—
Patient-days	21,164,148	20,112,599	Percentage occupancy ²	95.5	98.6
Per 1,000 population	1,004.9	940.9	FEDERAL HOSPITALS		
Av. daily no. of patients	57,984.0	55,103.0	General		
Per 1,000 population	2.8	2.6	Beds set up at Dec. 31	6,636	6,426
Percentage occupancy ²	94.7	93.0	Admissions	61,035	61,824
Tuberculosis			Per 1,000 population	2.9	2.9
Beds set up at Dec. 31	3,560	3,091	Patient-days	1,719,685	1,754,825
Admissions	7,466	6,000	Per 1,000 population	81.7	82.1
Per 1,000 population	0.4	0.3	Av. daily no. of patients	4,966.7	4,807.7
Patient-days	874,406	680,198	Per 1,000 population	0.2	0.2
Per 1,000 population	41.5	31.8	Percentage occupancy ²	73.3	74.2
Av. daily no. of patients	2,395.6	1,863.6	Allied special		
Per 1,000 population	0.1	0.1	Beds set up at Dec. 31	1,309	1,324
Percentage occupancy ²	64.4	55.8	Admissions	2,760	3,441
PRIVATE HOSPITALS			Per 1,000 population	0.1	0.2
General			Patient-days	368,859	257,657
Beds set up at Dec. 31	1,081	982	Per 1,000 population	17.5	16.7
Admissions	28,200	25,607	Av. daily no. of patients	1,004.4	979.9
Per 1,000 population	1.3	1.2	Per 1,000 population	—	—
			Percentage occupancy ²	79.5	74.9

¹ Patients refer to adults and children. All ratios are based on population estimates as at June 1 of the year concerned.² Based on rated bed capacity.**6.16 Average length of stay of adults and children in public general and allied special hospitals, by province, 1970 (days)**

Type of hospital	Nfld.	PEI	NS	NB	Que.	Ont.	Man.	Sask.	Alta.	BC	NWT	Canada
General												
Non-teaching with no long-term units												
1 — 24 beds	5.6	7.6	7.6	9.4	7.2	6.9	7.4	7.0	8.1	6.9	5.1	7.2
25 — 49 "	6.9	8.4	8.1	8.2	9.0	8.2	7.4	7.2	6.6	7.3	7.4	7.4
50 — 99 "	6.4	6.9	9.1	8.0	8.6	8.9	7.1	8.5	7.5	7.7	—	8.1
100 — 199 "	9.5	9.8	11.0	9.5	8.9	8.9	9.4	9.0	8.2	7.9	—	9.0
200 + "	9.7	10.8	11.0	9.8	10.1	9.1	9.4	13.3	8.6	8.0	—	9.4
Non-teaching with long-term units												
1 — 99 beds	13.4	—	—	—	12.0	11.6	9.5	—	12.2	11.7	14.9	11.5
100 — 199 "	—	8.9	—	—	11.8	10.1	9.6	—	—	10.4	—	10.2
200 + "	—	—	—	13.8	14.9	11.6	—	13.1	—	10.8	—	11.8
Total, non-teaching	7.9	9.2	10.0	9.6	9.7	10.0	8.1	8.3	7.6	8.6	7.9	9.3
Teaching, full												
1 — 499 beds	20.1	—	11.0	—	12.2	9.9	—	—	—	—	—	11.7
500 + "	—	—	14.4	—	12.9	12.3	11.2	13.9	9.8	11.2	—	12.0
Teaching, partial												
1 — 499 beds	11.6	—	—	11.4	10.7	10.2	8.8	10.5	—	10.1	—	10.5
500 + "	—	—	—	19.4	11.8	10.3	—	10.4	11.3	9.4	—	11.4
Total, general	9.7	9.2	10.7	10.8	10.8	10.6	9.0	9.2	8.8	9.2	7.9	10.1
Children's	11.1	—	7.8	—	8.6	8.7	8.4	—	8.7	—	—	8.7
Convalescent/rehabilitation	57.3	35.5	33.3	46.0	50.2	42.5	41.8	—	45.9	48.9	—	45.5
Chronic/extended care	212.5	—	—	83.7	227.0	221.5	128.8	—	246.7	502.7	—	219.7
Other	5.2	—	6.9	—	12.5	10.2	—	173.5	7.5	7.4	91.5	14.4
All public general and allied special hospitals	10.1	9.5	10.5	11.0	13.1	11.7	10.6	10.3	11.0	9.8	8.6	11.5

6.17 Full-time personnel employed in operating public, private and federal hospitals, by province, 1970

Province or territory	General ¹		General and allied special ¹		Mental		Tuberculosis	
	Number	Per 100 rated beds	Number	Per 100 rated beds	Number	Per 100 rated beds	Number	Per 100 rated beds
Newfoundland	5,266	213.1	5,955	199.7	694	83.9	203	91.0
Prince Edward Island	1,177	161.0	1,218	160.1	264	67.5	29	145.0
Nova Scotia	8,813	176.9	9,777	177.4	1,448	80.9	451	128.1
New Brunswick	8,183	187.2	8,324	185.9	1,230	68.4	—	—
Quebec	64,086	227.1	79,810	197.9	14,010	72.4	731	81.5
Ontario	85,775	198.6	96,398	188.0	18,444	94.6	584	63.8
Manitoba	10,848	191.8	12,986	187.1	2,186	80.8	134	93.7
Saskatchewan	9,975	145.5	10,541	141.9	1,670	62.8	224	100.9
Alberta	19,194	168.0	22,106	151.2	3,758	79.4	401	113.0
British Columbia	20,326	160.2	21,702	155.8	3,905	60.7	165	94.8
Yukon Territory	164	113.2	180	111.3	—	—	—	—
Northwest Territories	320	93.3	419	90.2	—	—	—	—
Canada	234,127	193.4	269,416	181.0	47,609	79.1	2,922	86.9

¹ Excludes paid medical staff.

6.18 Revenue and expenditure of operating public general hospitals, by province, 1969 and 1970

Year and province or territory	Operating hospitals	Total revenue \$'000	Expenditure				Supplies and other expenses %	Total \$'000
			Gross salaries and wages ¹ %	Medical and surgical supplies %	Drugs %			
1969								
Newfoundland	33	31,669	59.0	3.4	4.6	33.0		34,429
Prince Edward Island	8	6,400	63.7	3.3	4.0	29.0		6,556
Nova Scotia	43	57,921	62.3	3.1	3.2	31.4		59,141
New Brunswick	37	50,501	67.1	3.7	3.2	26.0		51,541
Quebec	135	440,808	74.1	3.2	3.5	19.2		474,188
Ontario	186	654,876	69.3	3.0	3.0	24.6		663,178
Manitoba	78	67,683	67.5	3.6	3.9	25.0		67,682
Saskatchewan	132	76,555	67.0	3.2	3.6	26.2		80,306
Alberta	115	123,599	67.8	2.9	3.2	26.2		129,242
British Columbia	88	152,035	72.5	3.6	3.3	20.6		159,186
Yukon Territory	2	135	58.8	3.0	6.2	32.1		235
Northwest Territories	7	1,497	59.3	2.2	2.3	36.2		1,681
Canada	864	1,663,679	70.2	3.2	3.3	23.4		1,727,365
1970								
Newfoundland	33	34,684	61.2	3.4	4.6	30.8		37,191
Prince Edward Island	8	7,542	66.2	3.2	3.3	27.3		7,695
Nova Scotia	43	65,674	62.7	3.4	3.2	30.7		66,631
New Brunswick	37	52,712	66.3	3.9	3.2	26.6		53,811
Quebec	131	500,723	74.4	3.2	3.2	19.2		547,044
Ontario	186	758,336	69.4	3.1	2.9	24.6		765,221
Manitoba	78	76,072	67.3	3.6	3.7	25.3		76,652
Saskatchewan	132	83,428	66.7	3.2	3.6	26.5		86,409
Alberta	116	141,556	68.5	3.0	3.2	25.3		146,983
British Columbia	88	173,506	73.6	3.6	3.1	19.7		180,548
Yukon Territory	1	—	—	—	—	—		—
Northwest Territories	6	1,530	60.4	2.2	2.5	34.9		1,750
Canada	859	1,895,763	70.4	3.3	3.1	23.2		1,969,935

¹ Includes medical staff remuneration.6.19 Average annual salaries¹ of nursing personnel in public hospitals, by academic qualifications, employment category and type of hospital, 1970

Category	Average salary \$
ACADEMIC QUALIFICATIONS ²	
Graduate nurse only	6,475
Clinical postgraduate training	7,040
University diploma — one year	7,090
Bachelor's degree in nursing	7,161
Master's degree in nursing	9,705
EMPLOYMENT CATEGORY ³	
Director nursing education	9,423
Associate or assistant nursing director	9,130
Associate or assistant director nursing education	8,597
Nursing supervisor	8,486
Head nurse	7,922
Assistant head nurse	7,262
Teacher	7,427

6.19 Average annual salaries¹ of nursing personnel in public hospitals, by academic qualifications, employment category and type of hospital, 1970 (concluded)

Category	Average salary \$
EMPLOYMENT CATEGORY³ (concluded)	
General duty	
Registered	6,475
Not registered	5,776
TYPE OF PUBLIC HOSPITAL⁴	
General	6,475
Chronic, convalescent and rehabilitation	6,589
Mental	6,611
Tuberculosis	6,536
Other	6,650

¹ Excludes shift differential pay.² General-duty (registered) nurse — public general hospitals.³ Graduate nurse without additional qualifications — public general hospitals.⁴ General-duty (registered) nurse without additional qualifications.

6.20 Patient-day¹ revenue and expenditure ratios of operating public hospitals, by province and type of hospital, 1970 (dollars)

Province and type of hospital	Revenue		Expenditure				
	Net in-patient earnings	Total	Gross salaries and wages ²	Medical and surgical supplies	Drugs	Supplies and other expenses	Total
NEWFOUNDLAND							
General	40.84	50.17	32.96	1.82	2.46	16.56	53.79
Allied special							
Children's	46.11	54.62	33.94	2.47	1.62	19.92	57.96
Convalescent/rehabilitation	34.70	41.61	29.31	0.40	0.37	13.17	43.24
Chronic/extended care	10.98	11.60	9.22	0.12	0.18	2.85	12.37
Mental	...	...	...	...	...	...	...
Tuberculosis	28.30	29.17	22.07	0.73	0.46	5.91	29.17
PRINCE EDWARD ISLAND							
General	32.73	38.56	26.04	1.27	1.30	10.73	39.34
Allied special							
Convalescent/rehabilitation	26.69	34.09	26.23	0.20	0.31	7.35	34.09
Mental	11.04	11.20	10.56	0.11	0.31	3.22	14.20
Tuberculosis	29.22	32.96	22.98	0.61	0.57	8.80	32.96
NOVA SCOTIA							
General	43.58	53.07	33.73	1.84	1.73	16.54	53.84
Allied special							
Children's	74.95	84.75	50.83	2.93	1.87	31.40	87.02
Convalescent/rehabilitation	31.53	40.11	25.62	0.92	0.81	12.38	39.73
Other	64.15	68.36	45.87	1.53	1.82	20.16	69.38
Mental	19.39	20.16	15.15	0.10	0.35	4.45	20.05
Tuberculosis	43.65	48.15	37.74	0.42	0.61	9.38	48.15
NEW BRUNSWICK							
General	38.72	44.32	30.03	1.75	1.45	12.01	45.25
Allied special							
Convalescent/rehabilitation	37.99	43.30	31.87	0.73	0.46	11.19	44.24
Chronic/extended care	23.58	24.17	16.83	0.58	0.74	6.05	24.20
Mental	13.45	13.68	10.17	0.09	0.30	3.12	13.68
QUEBEC							
General	58.23	68.20	55.48	2.40	2.37	14.27	74.52
Allied special							
Children's	77.16	103.77	85.89	3.00	2.82	25.00	116.71
Convalescent/rehabilitation	31.64	35.56	27.26	0.44	0.57	8.73	37.00
Chronic/extended care	23.35	24.21	19.96	0.31	0.61	4.52	25.40
Other	72.03	80.88	64.61	2.31	2.16	16.91	85.98
Mental	17.87	18.32	14.04	0.05	0.53	4.43	19.05
Tuberculosis	28.39	29.31	23.91	0.22	1.10	6.09	31.32
ONTARIO							
General	53.25	60.46	42.28	1.92	1.77	15.02	61.00
Allied special							
Children's	85.85	107.07	74.89	2.73	4.53	30.61	112.75
Convalescent/rehabilitation	31.52	35.14	23.08	0.34	0.45	11.68	35.56
Chronic/extended care	25.25	26.41	19.17	0.34	0.50	6.18	26.19
Other	84.38	121.31	79.55	1.71	3.89	42.55	127.70
Mental	24.29	24.70	19.87	0.07	0.28	4.36	24.58
Tuberculosis	32.61	37.56	26.55	0.28	0.33	10.20	37.36

6.20 Patient-day¹ revenue and expenditure ratios of operating public hospitals, by province and type of hospital, 1970 (dollars) (concluded)

Province and type of hospital	Revenue		Expenditure				
	Net in-patient earnings	Total	Gross salaries and wages ²	Medical and surgical supplies	Drugs	Supplies and other expenses	Total
MANITOBA							
General	45.87	51.55	34.96	1.89	1.94	13.16	51.95
Allied special							
Children's	63.89	79.92	59.84	2.68	3.37	16.72	82.61
Convalescent/rehabilitation	35.35	43.42	27.47	0.64	0.54	14.77	43.42
Chronic/extended care	26.93	28.45	21.87	0.43	0.91	5.11	28.33
Mental	14.92	15.19	11.85	0.05	0.28	2.92	15.10
Tuberculosis	30.88	34.29	23.88	0.33	0.54	7.63	32.38
SASKATCHEWAN							
General	38.40	43.25	29.84	1.44	1.62	11.89	44.79
Allied special							
Other	26.15	33.19	24.53	0.81	0.33	7.41	33.08
Mental	16.24	16.47	12.96	0.08	0.30	3.13	16.47
Tuberculosis	23.97	35.00	25.28	0.20	0.56	7.70	33.74
ALBERTA							
General	43.51	49.26	35.02	1.54	1.66	12.93	51.15
Allied special							
Children's	39.15	44.69	34.83	0.81	0.91	6.76	43.31
Convalescent/rehabilitation	45.38	52.65	33.67	0.36	0.39	12.84	47.26
Chronic/extended care	16.47	17.17	11.94	0.18	0.35	5.82	18.30
Other	83.66	103.36	76.49	1.59	3.10	21.03	102.20
Mental	14.68	14.93	10.82	0.05	0.27	3.79	14.93
Tuberculosis	42.40	46.30	35.72	0.21	0.80	9.58	46.31
BRITISH COLUMBIA							
General	45.61	50.15	38.38	1.88	1.64	10.28	52.18
Allied special							
Convalescent/rehabilitation	25.59	30.94	25.74	0.23	0.27	7.47	33.70
Chronic/extended care	17.73	17.92	17.03	0.27	0.26	4.15	21.72
Other	51.12	84.47	65.95	1.33	2.28	19.34	88.90
Mental	19.40	19.40	13.71	0.33	0.50	4.15	18.69
Tuberculosis	33.56	33.56	26.43	0.24	0.74	6.14	33.55
NORTHWEST TERRITORIES							
General	35.05	42.89	29.62	1.07	1.21	17.13	49.04
CANADA							
General	50.21	57.49	42.05	1.95	1.88	13.86	59.74
Allied special							
Children's	74.54	94.77	70.80	2.76	3.17	25.51	102.24
Convalescent/rehabilitation	32.95	38.03	26.76	0.41	0.47	10.64	38.27
Chronic/extended care	22.59	23.52	18.17	0.30	0.53	5.29	24.29
Other	65.62	81.01	60.84	1.82	2.20	19.92	84.77
Mental	19.36	19.71	15.31	0.09	0.39	4.14	19.93
Tuberculosis	32.11	35.45	27.02	0.29	0.71	7.83	35.85

¹ Adults and children.² Includes medical staff remuneration.

6.21 Hospital separations, separations and days per 100,000 population, and average days of stay, by diagnostic category, 1969¹

Diagnostic category ²	Separations	Separations per 100,000 population	Days per 100,000 population	Average days of stay
Infective and parasitic diseases	95,389	454	4,400	9.7
Neoplasms	179,678	855	15,729	18.4
Endocrine, nutritional, and metabolic diseases	69,137	329	6,068	18.4
Diseases of the blood and blood-forming organs	27,866	133	1,546	11.7
Mental disorders	112,837	537	9,708	18.1
Diseases of the nervous system and sense organs	131,497	626	10,213	16.3
Diseases of the circulatory system	314,163	1,495	36,626	24.5
Diseases of the respiratory system	513,564	2,443	17,354	7.1
Diseases of the digestive system	398,523	1,896	19,926	10.5
Diseases of the genito-urinary system	308,266	1,467	12,663	8.6
Complications of pregnancy, childbirth and the puerperium	490,452	4,680	26,862	5.7
Diseases of the skin and subcutaneous tissue	64,741	308	3,003	9.8
Diseases of the musculoskeletal system and connective tissue	124,132	591	9,823	16.6
Congenital anomalies	37,318	178	2,423	13.6
Symptoms and ill-defined conditions	94,712	451	3,355	7.4
Accidents, poisonings, and violence (nature of injury)	309,732	1,474	16,566	11.2
Supplementary classifications	36,640	174	4,278	24.5
All causes	3,308,647	15,741	187,074	11.9

¹ Excludes newborn and data for the Yukon Territory and Northwest Territories.² Major groupings of the International Classification of Diseases, Adapted — 8th Revision. More detailed information is available in Statistics Canada publication *Hospital morbidity* (Cat. No. 82-206) and *Hospital morbidity — Canadian diagnostic list* (Cat. No. 82-209).

6.22 Hospital separations per 100,000 population, by diagnostic category and age group, 1969¹

Diagnostic category ²	Under 15	15-24	25-44	45-64	65 +	Total
Infective and parasitic diseases	834	295	237	258	466	454
Neoplasms	127	249	780	1,743	3,299	855
Endocrine, nutritional, and metabolic diseases	159	146	236	579	1,140	329
Diseases of the blood and blood-forming organs	196	74	59	100	326	133
Mental disorders	94	461	845	909	607	537
Diseases of the nervous system and sense organs	688	284	402	735	1,625	626
Diseases of the circulatory system	128	164	845	2,930	8,709	1,495
Diseases of the respiratory system	4,756	1,272	928	1,463	3,126	2,443
Diseases of the digestive system	921	1,345	1,978	3,099	3,952	1,896
Diseases of the genito-urinary system	504	1,071	2,134	2,140	2,471	1,467
Complications of pregnancy, childbirth and the puerperium	15	12,291	9,920	80	—	4,680
Diseases of the skin and subcutaneous tissue	318	342	258	291	393	308
Diseases of the musculoskeletal system and connective tissue	165	343	680	1,138	1,277	591
Congenital anomalies	368	133	89	73	54	178
Symptoms and ill-defined conditions	412	342	411	531	790	451
Accidents, poisonings, and violence (nature of injury)	1,235	1,721	1,327	1,421	2,446	1,474
Supplementary classifications	53	112	201	214	620	174
All causes	10,966	14,432	16,337	17,663	31,300	15,741

¹ Excludes newborn and data for the Yukon Territory and Northwest Territories.² See footnote to Table 6.21.**6.23 Separated cases and operations in general and allied special hospitals, by age group, 1969**

Item		Under 15 ¹	15-24	25-44	45-64	65 +	Total
All separated cases							
Cases	No.	1,084,095	543,525	860,550	678,631	512,514	3,679,315
Days in hospital	"	7,675,237	3,695,607	7,397,329	9,772,817	13,322,009	41,862,999
Av. days per case	"	7.1	6.8	8.6	14.4	26.0	11.4
Separated cases undergoing surgery							
Cases (primary operations)	No.	315,098	307,885	452,137	318,560	165,107	1,558,787
Days in hospital	"	1,661,453	1,986,941	3,887,273	4,272,665	3,418,434	15,226,766
Av. days per case	"	5.3	6.5	8.6	13.4	20.7	9.8
Rate per 100,000 population							
All separated cases		16,664	14,432	16,337	17,663	31,300	17,505
All operated cases		4,843	8,175	8,584	8,291	10,083	7,416
Days of all separated cases		117,975	98,128	140,433	254,361	813,607	199,168
Days of all operated cases		25,538	52,759	73,797	111,207	208,772	72,443
Population ²		6,505,800	3,766,100	5,267,500	3,842,100	1,637,400	21,018,900

¹ Includes newborn cases plus cases under one year of age.² Estimate of June 1, 1969, exclusive of the Yukon Territory and Northwest Territories.**6.24 Primary operations in general and allied special hospitals, by age group and by sex, 1969¹**

Operation		Under 15 ²	15-24	25-44	45-64	65 +	Total
Neurosurgery	M	1,426	1,060	2,481	3,170	1,388	9,525
	F	906	610	1,755	2,356	942	6,569
Ophthalmology	M	7,799	1,784	2,552	5,040	6,717	23,892
	F	6,950	1,462	1,961	4,897	9,447	24,717
Otorhinolaryngology	M	82,933	15,809	14,343	7,097	2,088	122,270
	F	77,651	20,388	12,795	5,935	1,440	118,209
Thyroid, parathyroid and adrenals	M	266	132	352	342	94	1,186
	F	268	471	1,617	1,756	363	4,475
Vascular and cardiac surgery	M	1,562	823	2,889	7,096	3,218	15,588
	F	1,441	1,079	10,631	9,157	2,328	24,636
Thoracic surgery	M	365	480	941	1,907	1,094	4,787
	F	353	202	577	981	671	2,784
Abdominal surgery	M	23,585	12,558	24,771	35,435	18,186	114,535
	F	11,974	15,890	32,385	33,123	15,130	108,502
Proctological surgery	M	787	3,528	9,809	7,353	2,078	23,555
	F	578	2,811	6,729	5,449	1,649	17,216
Urological surgery	M	14,888	3,828	7,444	14,869	21,962	62,991
	F	3,332	1,294	4,070	4,865	2,869	16,430
Breast surgery	M	143	262	216	293	186	1,100
	F	152	2,072	7,135	6,896	2,167	18,422
Gynecological surgery	F	804	45,682	80,953	46,369	8,176	181,984
Obstetrical procedures	F	210	106,887	114,324	791	—	222,212
Orthopedic surgery	M	17,692	19,146	26,361	19,894	7,335	90,428
	F	11,977	8,675	14,332	20,003	14,822	69,809
Plastic surgery	M	10,323	8,672	8,556	6,737	3,137	37,425
	F	7,478	5,431	6,853	6,198	3,270	29,230
Oral and maxillofacial surgery	M	1,279	1,482	1,658	979	414	5,812
	F	983	700	879	740	344	3,646
Dental surgery	M	4,146	4,185	4,038	2,568	664	15,601
	F	4,557	5,575	5,458	2,943	652	19,185
Biopsy	M	963	682	1,740	4,141	3,743	11,269
	F	681	1,565	5,639	5,688	2,528	16,101
Diagnostic endoscopy	M	3,003	1,313	4,932	9,852	8,349	27,449
	F	3,558	2,041	5,897	6,997	4,861	23,354
Diagnostic radiography	M	2,589	1,752	5,405	8,099	4,155	22,000
	F	2,975	2,508	5,732	6,069	3,068	20,352

6.24 Primary operations in general and allied special hospitals, by age group and by sex, 1969¹ (concluded)

Operation		Under 15 ²	15-24	25-44	45-64	65 +	Total
Radiotherapy and related therapies	M	35	26	98	283	287	729
	F	45	31	604	1,373	629	2,682
Physical medicine and rehabilitation	M	1,295	302	607	1,134	1,570	4,908
	F	917	256	623	1,132	1,749	4,677
Other non-surgical procedures	M	922	1,916	6,564	5,025	575	15,002
	F	685	2,368	5,240	3,305	595	12,193
Other surgical and non-surgical procedures	M	173	64	102	121	97	557
	F	449	83	89	102	70	793
All operations	M	176,174	79,804	125,859	141,435	87,337	610,609
	F	138,924	228,081	326,278	177,125	77,770	948,178
	T	315,098	307,885	452,137	318,560	165,107	1,558,787

¹ More detailed information is available in Statistics Canada publication *Surgical procedures and treatments* (Cat. No. 82-208).

² Includes newborn cases and cases under one year of age.

6.25 Summary statistics on the incidence of tuberculosis, 1971

Province or territory, age group and origin	Notifications		Patients under treatment at Dec. 31			Persons receiving preventive out-pa- tient drug treatment, Dec. 31	Deaths
	New active cases	React- ivated cases	In- patients	Out- patients on drug treatment	Total		
PROVINCE OR TERRITORY	Number						
Newfoundland	187	32	66	334	400	82	16
Prince Edward Island	3	1	5	37	42	37	—
Nova Scotia	146	24	117	250	367	270	17
New Brunswick	118	19	58	362	420	187	9
Quebec	1,361	154	670	2,591	3,261	2,098	222
Ontario	899	207	417	1,871	2,288	5,212	85
Manitoba	257	32	98	499	597	1,019	19
Saskatchewan	149	25	85	210	295	121	10
Alberta	300	50	214	450	664	370	24
British Columbia	439	59	125	853	978	687	41
Yukon Territory	8	1	2	22	24	69	—
Northwest Territories	76	18	37	237	274	1,352	4
Canada	3,943	622	1,894	7,716	9,610	11,504	447
	Rate per 100,000 population						
Newfoundland	35.8	6.1	12.5	63.3	75.8	15.5	3.1
Prince Edward Island	2.7	0.9	4.5	33.0	37.5	33.0	—
Nova Scotia	18.5	3.0	14.8	31.5	46.3	34.0	2.2
New Brunswick	18.6	3.0	9.1	56.6	65.6	29.2	1.4
Quebec	22.6	2.6	11.1	42.8	53.9	34.7	3.7
Ontario	11.7	2.7	5.4	24.1	29.4	67.0	1.1
Manitoba	26.0	3.2	9.9	50.5	60.4	103.0	1.9
Saskatchewan	16.1	2.7	9.2	22.9	32.1	13.2	1.1
Alberta	18.4	3.1	13.0	27.4	40.4	22.5	1.5
British Columbia	20.1	2.7	5.6	38.3	43.9	30.8	1.9
Yukon Territory	43.5	5.4	10.5	115.8	126.3	363.2	—
Northwest Territories	218.3	51.7	102.8	658.3	761.1	3,755.6	11.5
Canada	18.3	2.9	8.7	35.5	44.2	52.9	2.1
AGE GROUP	Number						
0-14	384	3	146	576	722	2,011	3
15-24	484	20	126	836	962	2,510	3
25-44	1,159	161	414	2,471	2,885	3,087	46
45-64	1,163	296	679	2,584	3,263	2,970	172
65 and over	753	142	529	1,249	1,778	926	223
Total	3,943	622	1,894	7,716	9,610	11,504	447
	Rate per 100,000 population						
0-14	6.0	—	2.3	9.0	11.2	31.3	—
15-24	12.1	0.5	3.1	20.7	23.8	62.2	0.1
25-44	21.4	3.0	7.6	45.3	52.9	56.6	0.8
45-64	28.9	7.4	16.8	63.7	80.5	73.3	4.3
65 and over	43.2	8.1	30.1	71.1	101.2	52.7	12.8
Total	18.3	2.9	8.7	35.5	44.2	52.9	2.1
ORIGIN ¹	Number						
Indian	425	76	262	771	1,033	1,005	..
Eskimo	87	20	42	236	278	1,002	..
Other	3,431	526	1,590	6,709	8,299	9,497	..
Total	3,943	622	1,894	7,716	9,610	11,504	..
	Percentage distribution						
Indian	11	12	14	10	11	9	..
Eskimo	2	3	2	3	3	9	..
Other	87	85	84	87	86	82	..
Total	100	100	100	100	100	100	..

¹ This classification is shown to point up the high incidence of tuberculosis among the native population; Indians constituted 1.1% of the total population in 1961 and Eskimos 0.1%.

6.26 Reported cases of selected notifiable diseases and rate per 100,000 population, by province, 1971

International List No.	Disease	Nfld.	PEI	NS	NB	Que.	Ont.	Man.	Sask.	Alta.	BC	YT	NWT	Canada
<i>Number of cases</i>														
009.1	Diarrhoea of the newborn, epidemic	—	15	—	—	—	1	—	—	7	64	—	—	86
032	Diphtheria	—	—	—	—	1	2	3	8	48	11	2	—	75
004	Dysentery, bacillary	20	7	12	23	182	248	75	92	336	241	5	109	1,350
062.1	Encephalitis, western equine	—	1	—	—	—	—	—	—	—	—	—	—	—
—	Food poisoning, bacterial	4	1	5	60	64	—	2	41	53	6	—	—	236
005.0	Staphylococcal	4	1	5	60	54	—	2	41	53	6	—	—	226
005.1	Botulism	—	—	—	—	10	1	—	—	—	—	—	—	10
—	Hepatitis, infectious (including serum hepatitis)	389	552	296	170	255	1,906	980	665	1,330	1,954	19	268	8,784
070	Hepatitis, infectious	389	552	291	168	252	1,868	971	660	1,290	1,954	19	268	8,682
999.2	Hepatitis, serum	—	1	5	2	3	38	9	5	40	—	—	—	102
055	Measles	270	15	394	1	1,086	4,390	294	54	693	200	28	29	7,454
—	Meningitis, aseptic, due to enteroviruses	13	2	17	1	20	1	41	6	7	45	—	10	162
045.0	Coxsackie virus	—	1	3	1	8	1	1	—	—	—	—	1	14
045.1	ECHO virus	—	—	—	—	8	1	2	—	1	—	—	—	11
045.9	Not specified	13	2	14	—	4	1	38	6	6	45	—	9	137
036	Meningococcal infections	7	5	10	3	42	40	52	16	14	17	—	3	209
056	Rubella (German measles)	31	1	185	7	1,998	1,511	1,186	450	5,982	1,168	13	36	12,567
—	Salmonella infections, other	104	14	47	23	1,131	1,384	49	228	623	548	11	14	4,176
003.0	With food as vehicle	—	4	30	8	1,013	1	2	2	121	548	—	1	1,729
003.9	Without mention of food as vehicle	104	10	17	15	118	1,384	47	226	502	—	11	13	2,447
034	Streptococcal sore throat and scarlet fever	203	2,859	1,527	7	293	1,229	426	1,303	2,581	306	51	29	10,814
010,011, 012-019	Tuberculosis	187	3	146	118	1,361	899	257	149	300	439	8	76	3,943
—	Typhoid and paratyphoid fever	3	—	1	8	57	43	3	1	1	5	—	1	123
001	Typhoid	—	—	1	8	55	30	1	—	—	3	—	1	99
002	Paratyphoid	3	—	—	—	2	13	2	1	1	2	—	—	24
—	Veneral diseases	368	30	1,000	334	4,458	9,581	3,556	3,007	4,933	7,475 ⁹	338	1,817	36,897
098	Gonococcal infections	360	30	890	329	3,900	8,801	3,306	2,797	4,806	7,047	335	1,804	34,405
090-097	Syphilis	8	—	110	5	558	777	250	210	127	428	3	13	2,489
099.0, 099.1, 099.2	Other	—	1	—	—	—	3	—	—	—	—	—	—	3
033	Whooping cough	131	228	445	35	926	652	134	173	179	91	—	8	3,002

6.26 Reported cases of selected notifiable diseases and rate per 100,000 population, by province, 1971 (concluded)

International List No.	Disease	Nfld.	PEI	NS	NB	Que.	Ont.	Man.	Sask.	Alta.	BC	YT	NWT	Canada
Rate per 100,000 population														
009.1	Diarrhoea of the newborn, epidemic	—	13.5	—	—	—	1	—	—	0.4	2.9	—	—	0.4
032	Diphtheria	—	—	—	—	—	—	0.3	0.9	2.9	0.5	11.8	—	0.3
004	Dysentery, bacillary	3.8	6.3	1.6	3.6	3.0	3.2	7.6	9.9	20.6	11.0	29.4	302.8	6.2
062.1	Encephalitis, western equine	—	1	—	—	—	—	—	—	—	—	—	—	—
005.0	Food poisoning, bacterial	0.8	0.9	0.6	9.5	1.1	—	0.2	4.4	3.2	0.3	—	—	1.1
005.0	Staphylococcal	0.8	0.9	0.6	9.5	0.9	—	0.2	4.4	3.2	0.3	—	—	1.0
005.1	Botulism	—	—	—	—	0.2	1	—	—	—	—	—	—	—
070	Hepatitis, infectious (including serum hepatitis)	74.2	497.3	38.4	26.9	4.2	24.4	99.2	71.7	81.4	89.0	111.8	744.4	40.5
099.2	Hepatitis, infectious	74.2	497.3	37.8	26.6	4.2	23.9	98.3	71.1	78.9	89.0	111.8	744.4	40.0
099.2	Hepatitis, serum	—	1	0.6	0.3	—	0.5	0.9	0.5	2.4	—	—	—	0.5
055	Measles	51.5	13.5	51.2	0.2	18.0	56.2	29.8	5.8	42.4	9.1	164.7	80.6	34.4
045.0	Meningitis, aseptic, due to enteroviruses	2.5	1.8	2.2	0.2	0.3	1	4.1	0.6	0.4	2.0	—	27.8	0.7
045.0	Coxsackie virus	—	1	0.4	0.2	0.1	1	0.1	—	—	—	—	2.8	0.1
045.1	ECHO virus	—	1	—	—	0.1	1	0.2	—	0.1	—	—	—	0.1
045.9	Not specified	2.5	1.8	1.8	—	0.1	1	3.8	0.6	0.4	2.0	—	25.0	0.6
036	Meningococcal infections	1.3	4.5	1.3	0.5	0.7	0.5	5.3	1.7	0.9	0.8	—	8.3	1.0
056	Rubella (German measles)	5.9	1	24.0	1.1	33.1	19.3	120.0	48.5	366.1	53.2	76.5	100.0	58.0
003.0	Salmonella infections, other	19.8	12.6	6.1	3.6	18.8	17.7	5.0	24.6	38.1	25.0	64.7	38.9	19.3
003.0	With food as vehicle	—	3.6	3.9	1.3	16.8	1	0.2	0.2	7.4	25.0	—	2.8	8.0
003.9	Without mention of food as vehicle	19.8	9.0	2.2	2.4	2.0	17.7	4.8	24.4	30.7	—	64.7	36.1	11.3
034	Streptococcal sore throat and scarlet fever	38.7	2,575.7	198.3	1.1	4.9	15.7	43.1	140.4	158.0	13.9	300.0	80.6	50.0
010.011, 012-019	Tuberculosis	35.2	2.7	19.0	18.7	22.6	11.5	26.0	16.1	18.4	20.0	47.1	211.1	18.2
001	Typhoid and paratyphoid fever	0.6	—	0.1	1.3	0.9	0.6	0.3	0.1	0.1	0.2	—	2.8	0.6
002	Typhoid	—	—	0.1	1.3	0.9	0.4	0.1	—	—	0.1	—	2.8	0.5
002	Paratyphoid	0.6	—	—	—	—	0.2	0.2	0.1	0.1	0.1	—	—	0.1
098	Veneral diseases	70.2	27.0	129.9	52.8	73.9	122.6	359.9	324.0	301.9	340.4 ^d	1,988.2	5,047.2	170.2
090-097	Genococcal infections	68.7	27.0	115.6	52.1	64.7	112.6	334.6	301.4	294.1	320.9	1,970.6	5,011.1	158.7
099.0, 099.1, 099.2	Syphilis	1.5	—	14.3	0.8	9.3	9.9	25.3	22.6	7.8	19.5	17.6	36.1	11.5
033	Other	—	1	—	—	—	—	—	—	—	—	—	—	—
033	Whooping cough	25.0	205.4	57.8	5.5	15.4	8.3	13.6	18.6	11.0	4.1	—	22.2	13.8

¹ Not reportable.

6.27 Malignant neoplasms and rate per 100,000 population, 1970

Province or territory of residence	Number of cases			Rate per 100,000 population		
	New primary sites 1970	Deaths ¹ 1970	Hospital morbidity separations 1969	New primary sites 1970	Deaths 1970	Hospital morbidity separations 1969
Newfoundland	1,158	566	1,638	223.6	109.3	319
Prince Edward Island	322	169	525	292.7	153.6	477
Nova Scotia	2,372	1,312	4,831	309.7	171.3	633
New Brunswick	2,032	854	3,009	325.6	136.8	481
Quebec	15,065	8,513	21,369	250.5	141.6	357
Ontario	-	10,938	42,081	-	143.2	565
Manitoba	3,769	1,557	6,053	384.2	158.7	618
Saskatchewan	3,492	1,383	5,400	370.7	146.8	560
Alberta	3,767	1,827	9,005	235.4	114.2	577
British Columbia	8,962	3,321	13,629	419.4	155.4	659
Yukon Territory	41	17	—	256.3	106.2	—
Northwest Territories	74	26	—	224.2	78.8	—
Canada	41,054	30,483	107,540	298.8	142.6	512

¹ Includes only the deaths where underlying cause was stated to be due to malignant neoplasms.

6.28 Therapeutic abortions performed on residents of Canada and rate per 100 live births, by province and by quarter, 1971 and 1972

Province or territory	1971					1972		
	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.	Total	Jan.-Mar.	Apr.-June	Total Jan.-June
<i>Number</i>								
Newfoundland	13	17	13	35	78	42	35	77
Prince Edward Island	4	11	10	14	39	18	9	27
Nova Scotia	135	141	161	206	643	186	210	396
New Brunswick	27	26	39	54	146	52	31	83
Quebec	427	428	423	603	1,881	638	715	1,353
Ontario	3,294	3,973	4,151	4,755	16,173	4,948	4,896	9,844
Manitoba	161	181	195	290	827	292	289	581
Saskatchewan	143	171	216	226	756	232	274	506
Alberta	762	735	781	838	3,116	1,964	949	1,823
British Columbia	1,698	1,717	1,762	1,868	7,045	1,964	1,995	3,959
Yukon Territory	1	5	2	—	8	11	13	24
Northwest Territories	..	..	..	..	..	..	..	..
Canada ¹	6,707	7,461	7,804	8,951	30,923	9,321	9,480	18,801
<i>Rate per 100 live births²</i>								
Newfoundland	0.4	0.5	0.4	1.1	0.6	1.3	1.1	1.2
Prince Edward Island	0.8	1.9	1.9	2.8	1.9	3.4	1.6	2.5
Nova Scotia	3.8	3.8	4.4	6.2	4.5	5.2	5.7	5.5
New Brunswick	0.9	0.9	1.3	1.8	1.2	1.7	1.0	1.4
Quebec	1.8	1.8	1.9	3.1	2.1	2.8	3.0	2.9
Ontario	9.9	11.8	12.8	15.2	12.4	14.9	14.6	14.8
Manitoba	3.5	3.9	4.3	6.8	4.6	6.4	6.2	6.3
Saskatchewan	3.5	4.0	5.3	6.3	4.7	5.7	6.4	6.1
Alberta	9.7	9.3	10.2	11.9	10.2	11.1	12.0	11.5
British Columbia	18.6	20.0	20.3	22.0	20.2	21.5	23.3	22.4
Yukon Territory	0.8	3.6	1.5	—	1.6	8.6	9.4	9.0
Northwest Territories	..	..	..	..	..	..	..	..
Canada ¹	7.2	8.0	8.6	10.6	8.6	10.1	10.2	10.1

¹ Excludes therapeutic abortions for patients who were not Canadian residents. Where province of residence is not stated for Canadian residents, the cases are included only in the total and are not assigned to any specific province.

² Based on 1971 registered live births.

6.29 Pensions in force under the Pension Act as at Mar. 31, 1972

Service	Disability		Dependant		Total	
	Pensions	Liability \$	Pensions	Liability \$	Pensions	Liability \$
World War I	20,135	29,401,853	12,364	31,773,380	32,499	61,175,233
World War II	101,359	123,396,745	15,144	33,813,452	116,503	157,210,197
Special Force	2,032	2,179,702	166	347,111	2,198	2,526,813
Regular Force	3,505	3,215,102	668	1,862,023	4,173	5,077,125
Total	127,031	158,193,402	28,342	67,795,966	155,373	225,989,368

Sources

6.1 Health Economics and Statistics, Health Programs Branch, Department of National Health and Welfare.
 6.2 - 6.12 Research, Planning and Evaluation (Welfare) Branch, Department of National Health and Welfare.

6.13 - 6.28 Health and Welfare Division, Institutional and Public Finance Statistics Branch, Statistics Canada.

6.29 Public Relations, Department of Veterans Affairs.

Chapter 7

Education

7.1 Current developments

The cost of education in Canada for 1970 has been estimated at \$7,409 million, an amount representing almost 9% of the gross national product (GNP); by comparison, the cost of education in 1960 represented only 4.3% of the GNP. During the 1960s, school and university enrolment increased by 50% and staff by 70%, and by 1970, it was estimated that approximately 30% of the entire population of Canada was either receiving or dispensing education.

In the past decade Canada's administrators in the field of education have become increasingly aware of the need for young people to receive the types of education that will prepare them for their future careers; for professional, technological and cultural education to be diversified and of a high standard; and for the provision of equal educational opportunity for each individual regardless of socio-economic status, sex, ethnicity or location. The necessity of assuring equality of opportunity and of providing diversified programs has led education planners to offer a wide choice of courses at all levels of education. At the elementary and secondary levels, courses are included on fine arts, music, drama, urban planning, social geography and man in society. Community colleges and vocational institutions provide a widening range of advanced technological and para-professional courses. Universities offer varied interdisciplinary programs at the undergraduate and graduate levels and some have instituted programs of Canadian studies.

At the post-secondary non-university level, a proliferation of new structures has evolved. The most innovative type of institution that emerged across the country in the 1960s is generically known as the "community college". For example, in Quebec there are now about 35 colleges of this type, many of them formerly operated by religious communities. They are now known as *collèges d'enseignement général et professionnel* and are commonly referred to as CEGEPs. There are also about 20 private classical colleges in the province, some of which will undoubtedly be absorbed into the CEGEP group within the next few years. In Ontario, colleges of applied arts and technology (which incorporated the former institutes of technology and the provincial vocational centres and are known as CAATs) were set up in 1967 in 20 regions. This upsurge in the establishment of additional post-secondary vocational and technological institutions has occurred all across Canada. The institutions are evolving to meet the labour market's increasing need for qualified technicians and the students' need for diversified education.

Another significant change in education is the greater accessibility of programs to students regardless of sex. Females, who constituted about 36% of the full-time university and community college enrolment in 1971-72, are increasingly selecting, and being selected for, certain post-secondary courses which previously had shown almost total male enrolments. For instance, more women are now studying architecture and urban planning, engineering and applied sciences, dentistry, law and pharmacy, and a few women are enrolled in such courses as electronics and forestry. At the same time, male students are selecting courses which were formerly the preserve of females, such as nursing, social work, library science, dietetics and nutrition, and especially education. As education and occupations previously designated as male- or female-oriented become more open to both sexes, the choice of occupation will become increasingly more dependent on interest and ability regardless of sex. A major determinant in this transition is the continuing change in the cultural definitions of male and female work.

Further changes in Canadian education have been brought about by the realization that adjustments had to be made to accommodate variations in interest and abilities of students in different subjects. This has resulted in a drastic revision of policies to include non-graded systems, subject promotion, changes in methods of examination and the extension of guidance facilities.

One of the notable increases in teaching facilities is in the area of library service. A Statistics Canada survey showed that, in the school year 1968-69, school libraries increased their stocks of books by nearly 8 million. These libraries provide up-to-date reference books on all subjects in the school curricula and have assumed increasing importance as resource centres for audio-visual aids such as projectors, films, filmstrips, maps, tapes and records.

Efforts are also being made to overcome the financial barriers to continuing education. Investigations by demographers and sociologists confirmed the long-held suspicions that financial constraints were denying advanced education to many Canadians who could profit from it. Consequently, various methods have been tried to lighten the financial burden on the individual and to equalize the rapidly increasing load being carried by the taxpayer. The federal government is assuming an increasingly prominent role in the education field, particularly in regard to the retraining program of the Department of Manpower and Immigration involving adult technical and vocational training, as well as in post-secondary education and university education, all matters of prime concern to the nation as a whole.

7.2 Administration and organizational structure

7.2.1 Responsibility for education

7.2.1.1 Federal responsibility

Canada is a federal state, in which responsibility for the organization and administration of public education is exercised by the provincial and territorial governments. The federal government is directly concerned only with schools for Indian children which are administered by the Education Branch of the federal Department of Indian Affairs and Northern Development, with schools for children of servicemen operated in Europe by the Department of National Defence, and with schools for inmates of federal penitentiaries. In addition, the federal government finances retraining of adults, provides financial support to the provinces amounting to at least 50% of operating costs of post-secondary education, participates to a considerable extent in informal education, and makes grants-in-aid for research personnel and equipment in universities. More detailed information on federal responsibility for education is given in Sections 7.2.2 and 7.2.5.

7.2.1.2 Provincial responsibility

Each of the ten provinces and the two territories has the authority and responsibility for organizing its education system as it sees fit and, as a consequence, organization, policies and practices differ from one to the other. Each has a department of education or of education and youth, headed by a Minister who is a member of the Cabinet in the case of the provinces or responsible to the Council in the case of the territories; Ontario has a Ministry of Colleges and Universities, Manitoba a Department of Colleges and Universities Affairs and Alberta a Department of Advanced Education. Each provincial department is administered by a Deputy Minister who is a professional educationist and a public servant. He advises the Minister, supervises the department and gives a measure of permanency to its education policy and, in general, carries out that policy and is responsible for the enforcement of the Public School Act. The department of education usually also includes a chief inspector of schools and a staff of local inspectors, as well as directors or supervisors of curricula, technical education, teacher training, home economics, guidance, physical education, audio-visual education, correspondence instruction, adult education, other specialized sections according to the needs of the particular province, and technical personnel and clerks.

Other provincial departments having some responsibility for operating school programs include departments of labour which operate apprenticeship programs, agriculture departments which operate agriculture schools, departments of attorney-general or of welfare which operate reform schools, and departments of lands and forests which operate forest ranger schools.

From the beginning, each department of education has undertaken, among other things, to provide: inspection services to ensure maintenance of standards; teacher certification; courses of study and lists of prescribed or approved textbooks; financial assistance to local authorities in the construction and operation of schools; and guidance regulations for trustees and teachers. In return, each department requires regular reports from the schools. When first introduced, government grants to schools were based on such factors as number of teachers, enrolment, days in session and attendance. Somewhat later, special grants were introduced in most provinces to meet a variety of expenditures, such as construction of a first school, organization of special classes, transportation of pupils, school lunches and other contingencies. A number of provinces made provision for equalization grants and now most of them have a foundation program of one kind or another.

The work of the departments of education has grown considerably. Many have expanded

their services in the fields of health, audio-visual aids, art, music, agriculture, sociology, special education, correspondence courses and pre-vocational and trade courses. At the same time there has been an increasing delegation of authority to local boards and school staffs. One illustration of this tendency is a reduction in the number of departmental (external) year-end examinations. Few provinces now provide for more than one or two such examinations – at the end of the final and, in some cases, at the end of the second-to-last year of the secondary school course. Another illustration is the increasing use of lists of approved textbooks from which local authorities may make their own choice, instead of lists of prescribed texts. Courses of study are now seldom planned by only one or two experts in the department; instead, they result from conferences and workshops including active teachers and other interested individuals or bodies. In most provinces “curriculum construction” is considered to be a continuous procedure.

7.2.1.3 Elementary and secondary schools

In all provinces schools are established and operated by local education authorities functioning under the terms of a Public School Act and held responsible to the provincial government and resident ratepayers for the actual operation of the local schools. Through the delegation of authority, education has become a provincial-local partnership with the degree of decentralization reviewed intermittently.

Elementary and secondary schools may be classified as publicly controlled or private. The publicly controlled schools, sometimes referred to as “public” schools (including separate schools), encompass those that operate under the provincial school system with locally appointed or elected school boards. Private schools generally either provide a similar curriculum to that of publicly controlled schools or concentrate on business, commercial, trade, technical and correspondence courses, or provide a combination of such courses.

Under recent amendments to provincial legislation, school units have been consolidated and consequently enlarged in all provinces. With the growth of cities and towns and of educational facilities and requirements, the old-time three-member local school board became inadequate as an administrative structure. The original school boards remained as units but provision was made for urban school boards consisting of more members, responsible for both elementary and secondary schools and for providing the necessary staff, buildings, equipment and transportation. The local boards still in existence in some districts have limited powers and duties, usually functioning in an advisory capacity and looking after buildings and grounds.

7.2.1.4 Community colleges

Although there are some privately operated colleges, the provinces are partially or totally responsible for co-ordinating, regulating and financing community colleges and related institutions. Some provincial governments completely finance these colleges while others do so in part. Similarly, the degree of local autonomy given the colleges varies by province.

Since 1960, Alberta, British Columbia, Ontario and Quebec have established new community college structures. In Alberta, the provincial agency is the Alberta College Commission composed of nine members, all appointed by the government. In British Columbia, an advisory board – the Academic Board – serves both universities and colleges and consists of nine members, six appointed by the university and three by the provincial government. In Ontario, the administration of community colleges is carried out by the Ministry of Colleges and Universities. In Quebec, the Department of Education is responsible for many agency functions. The composition of governing boards varies by province; for example, in Quebec, it consists of 19 members including representatives from the university, the principal and academic dean, students and parents of students.

7.2.1.5 Universities

There are distinctive differences in Canadian systems of higher education. The universities and colleges long ago established by the French were based on the culture of Old France and were administered by Roman Catholic groups, either religious or secular. These French-language institutions still retain their traditional characteristics but now conform almost entirely to the North American system of administration. The largest group of universities and colleges in Canada is administered by English-speaking staff and offers instruction in English. Apart from those founded and still administered by various Protestant religious groups, these institutions are mainly non-denominational, having been established through private subscription or by the provincial government concerned.

Civil legislation regarding the establishment of new institutions or changes in existing ones is usually enacted by provincial legislatures, except for federal military colleges and a few institutions originally established by Act of the Canadian Parliament. Once an institution is legally chartered, control is vested in its governing body, the membership of which is indicated in the charter. The line of authority runs from the board of governors through the president (or rector) to the senate and deans and the faculty as a whole. The composition of the board of governors varies according to the type of institution. Provincial universities normally have government representation; church-related institutions have clergymen. Nearly all boards have either direct representation from the business community, alumni associations and other organizations, or are advised by these groups through advisory boards or committees. A recent phenomenon has been the inclusion of students on administrative bodies. The size of the board varies from a very few to over 60. It has ultimate control of the university and normally reserves to itself complete financial powers, including the appointment of the president and most other staff. On occasion there will be faculty representation on the board and recently there have been attempts on the part of faculty groups of many institutions to obtain greater representation on the boards of governors. Responsibility for academic affairs is usually delegated to the senate. Composed mainly of faculty members, although there may also be alumni and representatives of non-academic groups included, the board is responsible for admission, courses, discipline and the awarding of degrees.

7.2.2 Levels of education

7.2.2.1 Pre-grade 1, elementary and secondary education

Pre-grade 1 enrolment in schools offering elementary-grade instruction is neither compulsory nor universal throughout Canada, although kindergartens for five-year-olds are part of the elementary school system in large urban centres in most provinces. Recently, an increasing number of kindergartens are accepting four-year-olds. There are also some kindergartens which are run by private individuals and which accept children of three to five years of age.

Each September, most Canadian six-year-olds enter an eight-grade publicly controlled (including separate) elementary school. At about 14 years of age, a significant proportion of those who entered grade 1 move on to a four- or five-year secondary school. Less than 3% of the elementary and secondary students in Canada attend private schools.

The 8-4 plan leading from grade 1 to university was for many years the basic plan for organizing the curriculum and schools other than those under the jurisdiction of the Catholic school boards of Quebec. This plan, although still followed in some school jurisdictions, has been modified from time to time in all provinces, cities or groups of schools. There are a number of variants to be found in Canada at present: the addition of one or even two years of secondary schooling; the introduction of junior high schools, changing the organization to a 6-3-3 or 6-3-4 plan; or, the combining of the first six years of elementary school into two units, each designed to reach specified goals during the three-year period. In the recently established community colleges, the last one or two years of high school and the first one or two years of college are offered.

At the secondary level, three programs can generally be distinguished — the university entrance course, the general course for those wishing to complete an academic type of program before entering employment, and vocational courses for those wishing to enter skilled trades or pursue further training in the technological fields. However, in recent years changes in the curricula have allowed the student greater flexibility in program selection.

Secondary schools were at one time predominantly academic and prepared their pupils for entry into university. Until recently, vocational schools were to be found only in the large cities, although schools in some of the smaller centres did provide a few commercial and technical subjects as options in the academic curriculum. Today, in addition to the vocational schools and the regular secondary schools providing commercial courses, there are increasing numbers of composite and regional high schools offering regular academic subjects and vocational training in such courses as home economics, agriculture, shop-work and commercial subjects. Occupational or pre-employment classes, set up as part of the total program in regular vocational schools, require from one to three years or even four years for completion, and are terminal in nature. In addition to this type of course, some schools offer special, ungraded one- or two-year vocational programs to students who have completed the

final years of high school. Some secondary schools also provide occupational programs for students who have shown no particular aptitude for an academic education or for training in a specific trade. These students learn no specific trade until perhaps their third year of studies. By remaining in school longer, however, they adjust more easily to conditions in the work world.

7.2.2.2 Special education

There is increasing interest in the education of exceptional children. For gifted children, innovative, enriched and accelerated programs are being developed at both the elementary and secondary levels. New types of special classes are sometimes started by parents of children with a common disability, who band together to provide help and show the need for such service, which may then be taken over by public bodies. Progress in providing such education varies from province to province and is most commonly found in city school systems. There are six schools for the blind, 16 schools for the deaf, and a number of training schools for mental defectives. Special classes are conducted in tuberculosis sanatoria, mental hospitals and reformatories.

7.2.2.3 Trade and technical education

Increasing use of automated processes in business and industry is resulting in a shrinking market for unskilled and semi-skilled workers. Early school dropouts are finding it increasingly difficult to get suitable employment and many are trying to acquire in their adult years the general education or training in the skilled trades that they missed in their youth. Persons still in the regular school system are tending to remain longer and go farther in the system, partly because of the changing attitudes of society toward education and partly for economic reasons.

To meet this growing demand for better educational facilities, educators are striving to provide comprehensive programs at all levels to satisfy the needs not only of the university-bound but also of the great majority who require adequate preparation for early entry into the labour force. It is now accepted that vocational education for adults as well as for youths is a public responsibility that must be made available, as needed, throughout the person's working life. Education of this nature is of national concern and has a direct impact on material prosperity, the economy and the standard of living.

The pattern of vocational education in Canada varies from province to province and there are variations within the provinces. However, there are three basic types of institutes offering vocational education: secondary schools, trade and occupational training schools and post-secondary institutes of technology. Many municipal school boards provide vocational courses as part of the regular secondary school program in technical or composite-type schools. Students in these schools get some general vocational training or training in certain specific fields, such as typing or auto mechanics, along with instruction in general academic or cultural subjects.

Trade and occupational training schools, on the other hand, are open only to those who have passed the provincial school-leaving age and have left the regular school system. These schools offer specialized training and their purpose is to develop competent people for a wide variety of occupations. Courses at the trade level do not usually require high school graduation; the grade level demanded, which varies according to province or trade, ranges from grade 8 to grade 12.

The third type, the institutes of technology, operate at a higher level of training. Enrolment in the institutes presupposes high school graduation or at least high school standing in such relevant subjects as mathematics and the sciences. Graduates from institutes of technology are awarded diplomas of applied arts or diplomas of technology and form an essential link between professionals on the one hand and qualified craftsmen on the other. Most of the institutes of technology and trade schools across Canada are provincially operated.

In addition to the vocational education and training provided by these three types of publicly operated schools, many private business colleges and trade schools offer a wide variety of business, trade and technical courses, some through correspondence. Vocational education is also carried out under a system of apprenticeship training. Such training is given mainly on the job, with classes taken at the trade schools either during the evening or on a full-time basis during the day for periods ranging from three to ten weeks a year.

7.2.2.4 Tertiary education

Community colleges and related institutions provide post-secondary education in various programs that enable students to proceed to university with credit of up to three years of university study, or undertake technical/vocational training in programs of up to four years in duration, leading to the occupational level of the skilled technologist.

Entry requirements involve secondary graduation but in some institutions a "mature student" status is used to enable promising but otherwise ineligible students to enter. Qualifying programs are also offered to help students overcome academic deficiencies.

Programs offered in the technical/vocational sphere are widely diversified and reflect the manpower requirements of the college region. Other programs offered are: business administration, applied arts, health sciences and a wide variety of technologies such as architectural, mechanical, electrical, chemical and resource. Many of these colleges also offer both credit and non-credit programs in continuing education.

There were approximately 150 institutions offering college-level programs in Canada in 1971-72. The Atlantic Provinces had 12 colleges as follows: the College of Fisheries and the College of Trades and Technology in Newfoundland; Holland College in Prince Edward Island; two marine institutes, two technical institutes, a land survey institute and an agricultural college in Nova Scotia; and two technical institutes and a forest ranger school in New Brunswick. Quebec had a total of 68 colleges including 35 CEGEPs (*collèges d'enseignement général et professionnel*), 29 private colleges and several other colleges operated by departments other than education. In Ontario there were 26 CAATs (colleges of applied arts and technology), four agricultural colleges, three regional medical laboratory institutes, one college of art, one chiropractic college and one school of horticulture.

The western provinces had 34 colleges as follows: Manitoba, three community colleges; Saskatchewan, two public colleges and two private colleges; Alberta, six community colleges, three agricultural and vocational colleges, two technical institutes and two private colleges; and British Columbia, nine community colleges, two schools of art, two private colleges and one technical institute.

7.2.2.5 Nursing education

Traditionally, nurses' (RN) diploma courses have been conducted in hospital schools. In 1964, Ryerson Institute of Technology became the first non-hospital institution in Canada to include nurses' diploma training and since then there has been a definite trend toward giving the theoretical part of the instruction in community colleges and providing only the practical instruction in hospitals. Several provinces — Quebec, Saskatchewan, Alberta and British Columbia — offer nurses' training in non-hospital schools. Ontario has a network of regional schools of nursing which are neither part of the general education system nor under the administration of hospitals.

Another trend in nursing education is a shortening of the course from three years to two, except in Quebec where the three-year training period will remain (according to present plans) with the first two years spent in CEGEPs and the third in hospital to gain "polytechnical" training.

In addition to nursing education solely at the post-secondary non-university level, students receiving their nurses' (RN) diploma in hospital schools may qualify for a degree on completion of the necessary additional one- or two-year course or longer (depending on the institution) offered by some universities. Further, undergraduate and graduate degrees are offered to students who enter university directly from secondary school.

7.2.2.6 Teacher training

All provinces require candidates for elementary school teaching certificates to have high school completion or better, with at least one year of professional training in a faculty of education or a teachers' college. The training usually consists of professional and academic courses and some time spent in practice teaching. High school teachers are generally university graduates who have taken an additional year of professional training in a college of education, or who have graduated with a degree in education. The trend is for departments of education to delegate to universities the responsibility for training elementary school teachers as well as secondary school teachers.

In all provinces except Nova Scotia, Quebec and Ontario, all teacher training is conducted at the university level where three or four different courses leading to a degree are provided;

about three quarters of the time is devoted to academic courses in arts and science and the remainder to professional courses. Teachers' colleges still exist in these three provinces but are generally disappearing as independent institutions. In Nova Scotia, there is no plan to integrate its one teachers' college with the university, but an optional third year will be included in the program which currently requires two years after senior matriculation. Five universities also offer degree programs in education. The pattern in Quebec is for students to first complete the two-year academic program in a CEGEP and then continue their teacher training at university. Sixteen *écoles normales* have been absorbed by other institutions since 1969-70 and only five are still in operation. In Ontario, only eight teachers' colleges remain, and it is expected that by 1973-74 only persons holding a university degree will be accepted for teacher training.

7.2.2.7 University education

This level of education includes universities and colleges. A university may be defined as an institution of post-secondary education, professional training and research which grants first and advanced degrees; a college is an institution with usually only one faculty granting a first degree but is more likely to be affiliated with a degree-granting university. To qualify for entrance into university, students must have high school graduation (11 to 13 years of schooling depending on the province) or equivalent standing. In Quebec the new "collegial" program requires two years of CEGEP training before entering university. An applicant who lacks the usual academic qualifications may gain admittance to university after reaching a certain age by passing entrance examinations and being assessed as a "mature" student.

Courses of instruction ranging in duration from three to five years (in Quebec a minimum of five years from high school graduation) lead to a bachelor degree in arts, pure science and such professional fields as agriculture, engineering, business administration, pharmacy, nursing and education. Courses in law, theology, dentistry, medicine and some other fields are longer — usually requiring for admission completion of part or all of a first-degree course in arts or science. For those pursuing graduate studies and research, the second degree is normally the master's or licence (at least one year beyond the first degree) and the third is the doctorate (normally requiring at least two additional years beyond the second degree).

7.2.2.8 Continuing education

A relatively new phenomenon in Canadian education is the growth of continuing education, sometimes referred to as adult education. The provision of evening and summer extension and correspondence courses in a wide variety of subjects is now an important part of the education system. Diversified programs of study for adults through correspondence and extension courses are offered by school boards, provincial government schools, private trade schools and business colleges, business and professional associations, community colleges and related institutions, and universities. As a result of this activity in adult education, men and women who find it impractical or impossible to attend full-time or regular classes because of business and family responsibilities, illness or inaccessibility to schools are able to pursue accreditation at diverse educational levels or to advance their personal interests. Correspondence course study provides instruction to children and adults confined to home or hospital and to inmates of Canadian correctional institutions.

School boards, universities and community or regional colleges offer courses leading to formal accreditation as well as courses reflecting individual and community interests. Recent surveys of school boards and universities indicate that some 288,000 adults are enrolled in formal high school and university level courses on a part-time basis. In addition, more than 429,000 adults participate in a host of non-credit courses and related activities.

Another avenue that provides adults an opportunity to continue their education is home study. A recent survey of the provincial departments of education shows that more than 81,000 adults were enrolled in correspondence study courses. Several universities also offer degree or diploma credit courses through correspondence study.

7.2.3 Provincial and territorial education systems

The following paragraphs outline the administration and organization of education in all provinces and territories, emphasizing the important changes that have occurred in recent years.

Newfoundland. Until recently, the system of education in Newfoundland, originally established in 1874, was strictly denominational. As a result of the recommendations of a

provincial Royal Commission on Education and Youth set up in 1964, consolidation of the school systems of the major Protestant denominations has taken place but the Roman Catholic, Pentecostal and Seventh Day Adventist denominations still operate their own schools. Further reorganization occurred in 1969 when schools operated by 300 denominational boards in the province were regrouped into 35 districts. The Pentecostal Assemblies and the Seventh Day Adventists each operate one "school district" which, in theory if not in practice, embraces the whole province. The largest single denomination in the province, Roman Catholic, continues to operate its own system but the number of its boards was recently reduced from over 100 to 15.

Pre-grade 1 enrolment in Newfoundland is not compulsory but, with the construction of larger and more centralized elementary schools, increasing numbers of five-year-olds have been admitted for instruction in kindergarten classes and, by the fall of 1971, the kindergarten enrolment as a proportion of the five-year-old population had reached 95%. The number of children in nursery schools and kindergartens run by private individuals remains quite small.

There are two major patterns of school organization in the province: elementary schools (kindergarten and grades 1-6) with central high schools (grades 7-11), and elementary schools (kindergarten and grades 1-8) with regional high schools (grades 9-11). There are only a few junior high schools (grades 7-9) in the province which is also served by a network of 11 district vocational schools. No vocational instruction, except for commercial courses, is given in the secondary schools.

Tertiary education includes both university and post-secondary non-university programs. Memorial University in Newfoundland offers degree courses in arts and sciences, commerce and business administration, education, engineering and applied sciences, and certificate courses in public administration and banking. Post-secondary non-university education is offered at the College of Trades and Technology and the College of Fisheries, Navigation, Marine Engineering and Electronics. Nurses' (RN) diploma courses are conducted exclusively in hospital schools.

Prince Edward Island. During the past decade, Prince Edward Island has moved from small education units toward consolidation. In July 1972, a major reorganization of the provincial school administration changed the system formerly organized along county lines to one of five administrative units.

Kindergarten classes are not part of the publicly controlled school system; however, nurseries and kindergartens operated by private individuals provide some pre-grade 1 classes although the enrolment is still quite small in relation to the four- and five-year-old population.

The major pattern of school organization in Prince Edward Island until junior matriculation is: elementary school (grades 1-6), junior high school (grades 7-9) and senior high school (grades 10-12); an additional pattern consists of elementary school (grades 1-8) and high school (grades 9-12). As in other provinces, Prince Edward Island is working toward a system that will eliminate "grade" promotion in favour of "subject" promotion, using a "credit" system. Five percent of the elementary and secondary pupils currently receive their education in French, and French is taught as a second language in all other schools.

The province is served by a network of 15 regional high schools offering academic programs from grades 9-12 and a one- or two-year business education course. Two vocational high schools provide a variety of four-year trade courses — a one-year orientation program followed by three years of training in a specific trade concomitant with academic instruction in language, mathematics and science.

The Prince Edward Island School of Nursing is now the only establishment offering a nursing diploma leading to professional registration (RN). Two new institutions were opened in Charlottetown in 1969 — the University of Prince Edward Island which replaced the former Prince of Wales College and St. Dunstan's University, and Holland College which offers post-secondary vocational training.

Nova Scotia. As in other provinces, Nova Scotia has had changes in the organizational structure of elementary and secondary education. The Educational Assistance Act and certain amendments to the Education Act, both passed by the provincial legislature in 1968, allowed for the creation of amalgamated school boards. Three amalgamated boards began operation in 1970-71, and their operation is being evaluated. In addition, there are other boards designated as rural, urban and regional.

Nova Scotia has almost 100% of its five-year-old population in "primary" year in the publicly controlled schools; perhaps as a consequence, enrolment in private nurseries has increased only slightly in recent years.

The predominant grade organization in this province is: elementary school (primary and grades 1-6), junior high school (grades 7-9) and senior high school (grades 10-12). There are a few variations in this basic school pattern, such as primary to grade 6 and grades 7-12, or primary to grade 9 and grades 10-12. In 1969, a modified junior high school program was authorized which gives students of average or above-average standing extra instruction in one or more subjects. High school graduation is at either the grade 11 (junior matriculation) or the grade 12 (senior matriculation) level, although enrolment in the latter is not universal in this province. As a result of revisions in the school system since 1966, 13 regional vocational schools replaced the county vocational schools. Students now attend regional vocational schools for occupational training since the secondary schools provide only business and commercial programs.

In 1969, authority was given for the award of high school equivalency diplomas to adults who had not completed high school but had improved their educational standing through job experience or informal training. This diploma is awarded on the basis of a series of tests, developed and validated over a 25-year period by the Commission on Accreditation of the American Council on Education; Nova Scotia is the first Canadian province permitted to use these tests.

Nova Scotia has two institutes of technology offering trade-level and post-secondary vocational courses, an agricultural college providing post-secondary terminal and university transfer programs, and a land survey institute. A bilingual community college which was scheduled to open in 1970 to serve the Acadian population has not yet become operational. All nursing training leading to the (RN) diploma is carried out in hospital schools. There are several universities and colleges offering degree programs in many disciplines. Teacher training is given in one teachers' college and degree programs in education are offered in five universities — Acadia, Dalhousie, Mount Saint Vincent, St. Francis Xavier and St. Mary's.

New Brunswick. There are 33 school districts in the province combined into seven regions, each administered by a regional superintendent. Instruction is available in both English and French; 34% of the student population at the elementary and secondary level take their instruction in the French language.

Pre-grade 1 classes are not offered in the publicly controlled school system, except in unusual or "experimental" circumstances. Enrolment in private nurseries and kindergartens is also low in proportion to the number of five-year-olds in the province.

The province has a 12-year system of public education leading to junior matriculation. The most common patterns of school organization are: elementary school (grades 1-6), junior high school (grades 7-9) and senior high school (grades 10-12); and elementary school (grades 1-6) and high school (grades 7-12). Vocational courses are taught within the framework of the secondary school system and are taken concomitantly with academic instruction.

The New Brunswick Institute of Technology in Moncton and the Saint John Institute of Technology offer post-secondary vocational and technical programs. Teachers' colleges still remain in New Brunswick although there is indication that they will soon be integrated within the university system. In addition to six hospital schools, the Saint John School of Nursing offers training leading to RN. This province has four universities offering a variety of degree programs.

Quebec. In 1964, the Quebec government, acting on recommendations of the provincial Royal Commission on Education (1961-64), passed legislation (under Bill 60) establishing a new administrative structure for the school system in that province; the Department of Education replaced the former Departments of Youth and of Public Instruction. Today, in addition to the Minister and Deputy Minister, the structure of the Ministry includes two Associate Deputy Ministers — one for the Catholic sector and one for the non-Catholic sector. This change of system required large increases in education expenditures to finance the building of new schools and to acquire additional teaching personnel and materials. In September 1971, there were 64 regional school boards (55 Catholic and 9 Protestant) with 993 affiliated local school boards.

Kindergartens admitting five-year-olds are now part of the school system and in 1971-72

over 90% of the five-year-old population was registered. Elementary education, intended for pupils aged six to 11, is given in publicly controlled schools operated under the direction of local school boards. Since the autumn of 1968, pupils are enrolled in the first grade only if they have reached the age of six by October 1. The new system calls for six years of elementary school, five years of secondary school and a collegial level to be taken in post-secondary non-university institutions. Another emerging trend is a composite course with graduated options and promotion by subject matter.

The federal Department of Indian Affairs and Northern Development assumes full responsibility for the education of Eskimo children living in northern Quebec, and uses the curriculum established by the Department of Education of Quebec.

Collèges d'enseignement général et professionnel (CEGEPs), inaugurated at the beginning of the 1967-68 school year, replaced many of the former classical colleges, normal schools, schools of nursing and technical institutes. These colleges, currently numbering about 40, admit students graduating from grade 11 and offer three-year terminal technical programs and two-year academic programs which are prerequisite for university entrance. Private or classical colleges offer the equivalent of the two-year university transfer program offered in the CEGEP, at the end of which successful students receive a *diplôme d'études collégiales*. Students may, however, continue at these establishments and work toward a degree granted by the university to which the college is affiliated.

There are at present four English-language CEGEPs in operation. McGill University, Sir George Williams University and Loyola College (now affiliated with Sir George Williams) also offer the equivalent two-year CEGEP program preceding the three-year university program, an interim arrangement pending the establishment of additional English-language CEGEPs. Nursing diploma (RN) programs are now carried out exclusively in the CEGEPs. Teachers' colleges still exist in Quebec but the trend is for teacher training to be given in the universities after completion of the academic program in the CEGEPs. There are several universities and colleges located in Quebec that offer a wide variety of degree, diploma and certificate programs.

Ontario. Under recent amendments to the Ontario School Act, county districts have replaced former individual units that were administered by three-member boards of trustees. The larger cities, such as Toronto and Ottawa, are excluded and operate their own school systems. Roman Catholic schools are given a choice. In most of Ontario the separate administration of elementary and secondary schools has been abolished and these schools are now administered by the same board. With each county administered by one board, there has been a drastic reduction from thousands of districts to less than 200. An important amendment to the Act in 1969 provides for schools for trainable retarded children to be established under the jurisdiction of a special divisional board of education.

Ontario has a 13-grade system (senior matriculation) with provision for kindergarten and pre-school enrolment. The predominant pattern of school organization consists of elementary school (kindergarten, grades 1-8) and secondary school (grades 9-13). A variation in this organization is the 6-3-4 pattern: elementary school (kindergarten, grades 1-6), junior high school (grades 7-9) and senior high school (grades 10-13).

One of the latest developments is the employment of a "credit system" to cover the former grades 9-12 leading to the secondary school graduation diploma. This will provide more flexible schedule patterns with a view to greater freedom of student choice within an expanding range of subject offerings, even to the creation of "individual timetables" for students. A credit is defined as a course successfully completed, normally after 110 to 120 hours of scheduled time. The diploma (grade 12 standing) is awarded after the successful completion of a minimum of 27 credits.

High schools in this province offer double-option trade courses in the science, technology and trades programs, and double-option business courses in the business and commerce programs. There is also a two- or three-year occupational program to which some students may voluntarily return for a fourth year. There are also special one-year commercial and technical programs that follow grade 11 or 12.

In Ontario at the beginning of the 1967-68 school year, the former institutes of technology and the provincial vocational centres were incorporated into colleges of applied arts and technology known as CAATs. These colleges were set up in 20 regions to serve the needs of the communities at both the post-secondary and the occupational levels. While the CAATs were

not designed to accommodate prospective university transfer students, the universities do accept first-class graduates from the two- or three-year post-secondary programs into the first and second year degree courses, respectively. On October 1, 1971, these institutions became the responsibility of the newly formed Department of Colleges and Universities. In addition to the regional schools of nursing and the hospital schools of nursing, Humber College and Ryerson Polytechnical Institute offer nurses' (RN) diploma programs. Eight independent teachers' colleges existed in Ontario in 1972-73 but it is assumed that a number of these will soon be integrated with the university system. There are over 20 universities and colleges in this province offering a diversified program of courses leading to degrees, diplomas and certificates.

Manitoba. In 1971-72 over 90% of public school enrolments in Manitoba came under the administration of 48 unitary division boards responsible for all public elementary and secondary education within their jurisdictions. In addition, there are some schools in the remote areas of the province and other special schools that are not included in these 48 unitary division boards.

Public kindergarten classes are available in most elementary schools in Manitoba. Enrolments have almost tripled in the past ten years as these facilities have been expanded and the number of children in private nurseries and kindergartens has consequently declined.

There are two major patterns of school organization in the 12-grade system to senior matriculation: elementary (kindergarten and grades 1-8) and high school (grades 9-12); or elementary (kindergarten and grades 1-6), junior high school (grades 7-9) and senior high school (grades 10-12). Increased emphasis is being placed on open-area classrooms, higher qualifications for teachers, and improved curricula. Other innovations in the elementary and secondary schools include: more meaningful curricula for Indian and Métis children now incorporated into regular classes; emphasis in health programs in relation to alcohol and narcotics; audio-lingual programs in French and German at grade 10 level; and emphasis on continuous testing to replace formal examinations and on the concept of "independent study" for students in some secondary schools. Final examinations are set and marked under the auspices of the High School Examination Board of Manitoba. Entrance to university requires evidence of Board standing in at least three subjects with school standing acceptable in two other subjects.

In Manitoba, vocational students may take either a pre-employment commercial or industrial program the successful completion of which entitles them to an "academic transcript". Alternatively, students may complete the university entrance program and continue for an additional year in a special commercial program, or those following the industrial program may spend half their time in the university entrance program. There is also an occupational entrance program commencing at grade 7 and continuing until grade 10 or 11, during which period students receive part of their training on the job in business or industry.

The Manitoba Institute of Technology and Applied Arts and the two vocational centres at Brandon and The Pas were designated as community colleges in the fall of 1969 and renamed Red River Community College, Assiniboine Community College and Keewatin Community College, respectively. These institutions offer both post-secondary terminal career programs and vocational courses at the trades level. Although no provision is made for university-transfer programs, graduates from the career programs have, in special circumstances, been granted credits applicable to a university program. Training for nurses qualifying them for the RN diploma is provided at Red River College as well as at five hospital schools.

Teacher training is offered only at the university level in this province. Seven colleges and universities are located in Manitoba offering degree programs. The largest – the University of Manitoba – offers a wide range of courses including arts and science, law, medicine, education, applied sciences, architecture and many others.

Saskatchewan. Many schools in the larger centres of Saskatchewan are now offering kindergarten education, although elsewhere in the province such classes are not normally available. The proportion of five-year-olds attending pre-grade 1 classes within the publicly controlled school system has increased from about 15% in 1960-61 to 27% in 1971-72.

The traditional 12 elementary-secondary grades have been replaced by four divisions, each consisting of three years of school for a student making normal progress. In Divisions I

and II, the principle of non-grading, involving the ideas of continuous progress and flexible promotion, has been adopted. Division III programs have been planned to meet the special needs of pupils in the 13-15 age group faced with the problems of emerging adolescence. Division IV is undergoing major changes in the total scope of courses offered and in the content and methods used within particular subject areas. Recent amendments to the Saskatchewan School Act allow for the exclusion from the regular system of children so mentally deficient as to be incapable of learning. Educable handicapped children attend special classes in regular schools; blind and deaf children between seven and 16 years of age are educated in special schools.

In Saskatchewan, vocational subjects may be taken in the general, industrial arts, commercial or special terminal programs, none of which qualify the student for university entrance. Vocational courses in the high schools were set up with a view to providing a closer articulation between those schools and the technical institutes. Most of the vocational students in grade 9, apart from those in the commercial course, take five shops not associated with any one specific trade; similarly, students in grade 10 may take two shops. The Saskatchewan Institute of Applied Arts and Sciences and the Saskatchewan Technical Institute offer vocational courses only at both post-secondary and trades levels. The former has taken over the total responsibility for the nurses' (RN) diploma program, and in 1972 only one hospital school remained.

The University of Saskatchewan, at both the Regina and Saskatoon campuses, offers a wide range of degree programs.

Alberta. Education in Alberta is under constant review by the province's Commission on Educational Planning, charged with the broad task of predicting what Alberta society will be like educationally, socially and economically during the last decades of the 20th century. Innovations in recent years in the elementary-secondary level include: extensive experimentation in programs carried out at the local school level; the use of French as the language of instruction during 50% of the school day in grades 3-12 in certain schools; construction of modern buildings incorporating the latest design in instructional facilities; movement toward the semester system and other methods of dividing the school year; and implementation of school television projects. The province is organized into divisions for purposes of education and each division is administered by its own school board.

Kindergarten classes are not part of the provincial school system although some school boards, particularly those in the cities, do provide such classes. In addition, about 20% of five-year-old children are enrolled in privately operated nursery schools and kindergartens.

The two predominant patterns of school organization in Alberta are: elementary school (grades 1-6), junior high school (grades 7-9) and senior high school (grades 10-12); or elementary school (grades 1-8) and high school (grades 9-12). Alberta operates its secondary schools on the composite or comprehensive principle. Most of the wide range of vocational programs conducted are offered in grades 10-12. In grade 12, some of the vocational courses lead to the granting of 15-20 credits, of which 100 are required for an Alberta High School Diploma.

In the fall of 1971, a new Department of Advanced Education was formed, separate from the Department of Education. This Department is responsible for universities, public colleges, institutes of technology and the agricultural and vocational colleges formerly under the jurisdiction of the Department of Agriculture. The five public colleges, previously known as "junior" colleges, the two institutes of technology and the three agricultural and vocational colleges, all offering vocational programs at the post-secondary level, are now part of the community college system.

Programs at the first- or second-year university level are provided at three church-related institutions: Camrose Lutheran College, the bilingual Collège St. Jean and the Canadian Union College which also offers two-year terminal vocational studies in secretarial science. Nurses' (RN) diploma programs are at present given at both hospital schools and four community colleges: Lethbridge, Medicine Hat, Mount Royal and Red Deer.

One large university, the University of Alberta, offers a variety of courses including fine and applied arts, arts and sciences, medicine, dentistry, pharmacy, nursing, household science, engineering and applied sciences, agriculture, library science, law and education. The province also has two other universities — the University of Calgary and the University of Lethbridge and three small colleges.

British Columbia. Details of education programs in British Columbia are similar to those of the other provinces. Its central organization divides responsibility for: curriculum, instruction, adult education, university and college affairs, research and standards, home economics, correspondence courses, school broadcasts, visual education, technical and vocational education, community programs, Jericho Hill School for the deaf and blind, and examinations.

The majority of school districts provide kindergarten classes. In September 1971, 53% of the five-year-old population was enrolled in pre-grade 1 classes in the publicly controlled elementary schools and enrolments of five-year-olds in privately operated nursery schools and kindergartens accounted for another 12%.

British Columbia's former 13-year system of education culminating in senior matriculation is being replaced with a 12-year system but the senior matriculation year is still available in universities, in some of the regional colleges and in some high schools. The predominant pattern of school organization consists of elementary school (grades 1-6), junior high school (grades 7-9) and senior high school (grades 10-12). Five of the six programs offered in grades 11 and 12 are vocationally oriented — commercial, industrial, community services including home economics (not specifically labour-force-oriented), visual and performing arts, and vocational. There are a substantial number of pupils enrolled in special classes, such as those for educable retarded, blind or deaf children. In most school districts, the less severely handicapped receive special instruction in regular schools but the more severely handicapped are taught in special schools under government or private operation.

Ten community colleges and the British Columbia Institute of Technology have been established since 1965. The colleges, operated by consortiums of school boards, enable residents of a particular geographic area to take the junior years of university or a post-secondary terminal vocational course. Vancouver City College is operated by the Vancouver School Board only, and the British Columbia Institute of Technology, which offers post-secondary career programs only, is operated by the provincial Department of Education. Trinity Junior College is a church-related institution which provides the first two years of university. Columbia Junior College, a private non-denominational institution located in Vancouver, offers a terminal career course in fashion design as well as university transfer programs which are recognized by the University of British Columbia.

In addition to the hospital schools of nursing, the British Columbia Institute of Technology, Selkirk College and Vancouver City College offer the nurses' (RN) program and Vancouver City College provides specific training in psychiatric nursing.

The largest degree-granting institution in the province — the University of British Columbia — has faculties of architecture, law, medicine, applied sciences, education, arts and sciences and others. A major development for the 1970s, based on the report of the Commission on the Future of the Faculty of Education, is the revision of the academic program and administrative structure of this university's Faculty of Education. Among the 85 recommendations are such innovations as the adoption of a single five-year Bachelor of Education program, introduction of the "teaching associate" idea, a new Master of Pedagogy degree, and student participation in decision-making at the operational level. There are two smaller universities, Victoria and Simon Fraser, in British Columbia and a number of small colleges, most of them church-related.

Yukon Territory. The Yukon Territory school system is administered by the Yukon Department of Education and operated through a superintendent and staff at Whitehorse, appointed by the territorial government and responsible to the Commissioner of the Territory. Schools in the Yukon Territory have always been publicly controlled, except for the federal Indian Residential School at Carcross which closed before the 1969-70 school year. In 1971-72 enrolment in the 22 schools was 4,806.

Northwest Territories. The Northwest Territories school system, consisting of the districts of Mackenzie, Franklin and Keewatin, is operated by the Department of Education of the territorial government. The official transfer of responsibility for education from the federal Department of Indian Affairs and Northern Development to the territorial Department of Education occurred in April 1969 in the Mackenzie District and April 1970 in the Franklin and Keewatin Districts; 58 schools came under the control of the territorial Department, in addition to several schools already under its control. Total enrolment in 1971-72 was 11,209.

The territorial Department of Education is continuing the work done in the past by the Department of Indian Affairs and Northern Development, and is providing educational opportunities for northern residents equivalent to those enjoyed by citizens in southern Canada. New schools have been constructed at Edzo, Frobisher Bay, Baker Lake, Cape Dorset, Coral Harbour and Clyde River and an education curriculum has been developed relevant to the cultural heritage of Eskimo, Indian and Métis students, who make up the majority of pupils in the schools. The Department, with the assistance of the Department of Indian Affairs and Northern Development, is initiating the collection of stories and legends of the Dogrib people and a Dogrib grammar and a dictionary are being produced.

7.2.4 Education of Indians and Eskimos

Indians. The key to continual progress in Indian education is the increasingly active participation of the Indians themselves through their education committees and membership on school boards, strengthened by support from non-federal governments and from professional groups concerned specifically with the classroom instruction of Indian students. During 1971-72, 45 Indian trainees attended special courses for social counsellors in Ontario and on graduation were employed by band councils, school boards or the Department of Indian Affairs and Northern Development to provide counselling in various areas of the education program; 53 Indian students were enrolled in training programs in Manitoba that will fully qualify them as teachers; and in Alberta 39 teacher assistants were trained and later employed in the school system. Indian history, traditions and languages are now being included in the curriculum and native culture is stressed by means of language, visual aids, tapes and printed matter as well as by Indian dances and arts.

Although the Education Branch of the Department of Indian Affairs and Northern Development maintains and operates a number of schools for Indians, of the 71,523 Indian students in elementary and secondary schools in January 1972, more than half attended non-federal schools, a system arranged for the most part through agreements between band councils, the Branch and individual school boards. In Manitoba, British Columbia and New Brunswick, however, under agreement with the respective provincial governments, a uniform tuition fee is paid for Indian students attending schools under the jurisdiction of the province. Federal financial assistance for Indian students attending non-federal schools varies from payment of tuition fees and provision of school buses, many of them operated by band councils or Indian contractors, to full maintenance either in boarding homes or student residences, which during the year accommodated 12,000 Indian students unable to attend local schools because of isolation or other reasons. Promising senior students are awarded scholarships to attend university or vocational school, and scholarships are given to those who show promise in the arts; in 1971-72, 89 scholarships were awarded for continued professional training.

Federal schools for Indian students are in operation in all provinces except Newfoundland. During 1971-72, 17 major school construction projects were under way or completed, providing 89 classrooms, 12 kindergartens, 11 gymnasiums and 12 staff units to the federal school system at a cost of approximately \$11 million; an additional \$5.3 million was paid for classroom space in provincial schools attended by Indian pupils. The two-year kindergarten program continued to receive special emphasis and is viewed as a major step in reducing premature withdrawal from school and age-grade retardation; enrolment in this program increased by 13.5%.

Eskimos (Inuit). Great emphasis is given to education and vocational training as the means to help the Eskimo people adjust to a changing way of life. In 1971-72, 4,375 Eskimo pupils were enrolled in school in the Northwest Territories compared with only 451 out of a total of 2,000 pupils in 1955. There are 69 settlements in the Northwest Territories, 32 of which are Eskimo settlements. Of the 58 schools, 30 are in Eskimo settlements. Kindergarten classes are provided in 35 of these schools, 22 of them in Eskimo settlements.

Throughout the Northwest Territories education is a responsibility shared by the federal and territorial governments and administered by the Department of Education of the Northwest Territories. In April 1969 the territorial government assumed responsibility for the administration of education in the Mackenzie District, and a year later took over the same responsibility for the eastern Arctic district. The responsibility for education of the Eskimos in Arctic Quebec remains with the Department of Indian Affairs and Northern Development.

Every Eskimo child in school represents in some measure an achievement over difficulties of climate, distance and language on the part of those responsible for bringing education to Arctic Canada. Education in this rapidly changing society must provide innovative programs if it is to meet the needs of residents, and it is in this context that the Northwest Territories Department of Education developed curriculum, teaching methods and community involvement during 1971.

In September 1971, the first elementary curriculum designed for northern conditions was distributed in draft form to every school in the North. This curriculum contains materials appropriate to the social and cultural environments, including a special series of readers designed for both Indian and Eskimo children.

The Continuing and Special Education Division of the Department provides for all educational and training activities not contained within the formal elementary and secondary school systems. Adult education programs are designed to help adults in the territories develop their abilities to the fullest extent and to make living more meaningful and comfortable in a rapidly changing technological age.

Vocational education programs, including apprenticeship, are designed to train people for either wage employment or self-employment in specific occupations. Apprenticeship continues to be the most effective program for the development of trades people; manual skills are learned on the job where close watch is kept to assure that the apprentice is receiving work experiences in all available trades practice. In addition, each indentured apprentice receives six to eight weeks of full-time trade theory training in an in-school situation during each year of his apprenticeship.

It will, however, be some time before an extensive university program is offered in the North. The University of Saskatchewan now offers courses in its research centre at Rankin Inlet, and the University of Alberta has expanded its program in the Mackenzie area, offering courses at Fort Smith, Yellowknife and Inuvik. During 1971 the first Eskimo medical doctor graduated from the University of Manitoba and the first Eskimo helicopter pilots completed their training.

7.2.5 Financing education

Of the total expenditures on education across Canada amounting to \$7,409 million in 1970, local governments contributed 24%, provincial governments 57%, the federal government 11% and the remaining 8% originated from fees and other sources.

Local and provincial education. The magnitude of the elementary-secondary sector of education is most clearly evident when expressed in dollars. In 1969 and 1970, total expenditures at this level were \$4,263 million and \$4,805 million, respectively, these amounts representing over 65% of all expenditures for all education in Canada. The 1970 expenditure represented a 72% increase over the \$2,791 million spent in 1966 and more than three and a half times the amount reported ten years earlier.

The actual operation of public elementary and secondary schools is in the hands of the local elected or appointed school boards which determine the budgets and therefore the amount of taxes required for school purposes. In most cases, these taxes are levied and collected for the boards by the municipalities; however, in those areas where there is no municipal organization the school boards have the power to levy and collect taxes for school purposes. In the calendar year 1970 local governments provided 46% of the cost of operating the public schools, provincial governments 52%, and the remainder was obtained from various other sources. Except in Newfoundland, where they represent almost 2% of total revenues, fees represent less than 1%. Four provinces — British Columbia, Alberta, Manitoba and Nova Scotia — pay operating grants on an equalization formula and thus ensure at least a minimum level of education throughout the province. The standard is determined either in terms of so much per pupil, or from an established salary scale for teachers with a prescribed teacher-pupil ratio, or by some combination of these.

In Newfoundland where municipal organization scarcely exists outside certain larger centres, there are three school-tax areas. In Prince Edward Island where there is no municipal organization except in the cities of Charlottetown and Summerside, the school boards levy and collect property and poll taxes but the province provides about two thirds of the operating costs. Ontario and Saskatchewan make use of various equalization and incentive grants. On January 1, 1967, the New Brunswick government introduced a Program of Equal Opportunity

under which it assumed full responsibility for public education and other social services. Consequently, in the following two years 98% and 99%, respectively, of the revenue used for public education was derived from provincial taxes (real property and sales taxes); the rest came from miscellaneous sources. Most provinces provide grants for school buildings and equipment, establish loan funds, and guarantee debentures for school purposes and assist in selling them.

The creation of a financial reporting system which ensures comparability between the provinces and timeliness of output has been difficult. However, events have now moved forward to the point where reasonably accurate comparable cost-per-pupil data for each of the provinces at the elementary-secondary level are available. Differences in accounting procedures do create difficulties but, for the most part, can be coped with. It must be remembered that the number of students being dealt with in all cases is extremely large, and the expenditure items on which consistency is difficult to achieve across all provinces are always relatively minor in relation to the provincial total.

In the past, reliance was placed entirely on audited statements and published public accounts for all data; this resulted in delays that sometimes exceeded 30 months between the termination of an academic year and the publication of national information on schooling costs in Canada. However, provincial departments of education are now providing budgets and other information which will make it possible to have financial estimates available at the same time as enrolment statistics.

The determination of accurate educational costs on a current basis has enabled the federal government to provide significant sums of money (\$62.9 million in 1971-72) to the provinces to further the aims of bilingualism. A fixed percentage of the cost-per-pupil of elementary-secondary education is paid to each province, based on their costs, for the amount of minority language education provided and the time devoted to teaching the second language.

The importance of adequate statistics in order to plan and maintain a program of education support cannot be over-emphasized. An excellent data base already exists and it is constantly being refined and improved. The use of education statistics in order to establish and maintain programs designed to meet national and regional aims is now a genuine possibility, and could be put to immediate use.

Financial data (along with enrolment and teaching staff statistics) form an integral part of a developing nation-wide information system which was initiated by the Council of Ministers of Education in Canada but has been carried on by the Education Division of Statistics Canada since 1969. In addition, other initiatives have been taken to round out the statistical picture. In 1971, a survey was undertaken on school transport to provide national and provincial data on a number of aspects of this particular education phenomenon, on which very little information has ever been available; results of the survey are expected in mid-1973. Recent moves in nearly all provinces to consolidate both administrative and education services into large units have resulted in significant increases in pupil transportation services which, it appears, now absorb from 3% to 10% of school board budgets.

Federal contributions to education. In 1970-71, universities and colleges received more than 76% of their operating funds from the federal and provincial governments. Private schools and colleges are normally supported by student fees, endowment income, gifts and income from sponsoring bodies.

In 1969-70, federal government expenditures on education amounted to an estimated \$803 million excluding monies transferred to provinces under the terms of the Federal-Provincial Fiscal Arrangements Act. In addition, some \$205 million was spent at the university level and expenditures on non-university post-secondary education, including vocational training, amounted to \$403 million. Finally, direct expenditures by the federal government on elementary-secondary education and teacher training accounted for \$195 million.

Some 60 federal government departments and agencies contribute to education in one way or another. As stated previously, the federal government has no responsibility for the organization and administration of education. It has, however, a vital interest in the quantity and quality of education, the skills of the population and the extent of scientific research carried on in Canada, realizing the effect of these on the national economy and on individual and social development.

During the past few years, federal support to education has undergone significant change. As a result of the federal-provincial conference of October 1966, the federal government undertook to provide increased support to education. Recognizing that education is a provincial responsibility, it decided to discontinue payment of operating grants directly to universities and to expand its support beyond university education and included in its program all, or almost all, post-secondary education, i.e., the educational institutions and courses requiring for admission at least junior matriculation, or its equivalent, in each province. The provinces were offered the choice of either a federal per capita grant of \$15 based on population or 50% of operating costs of post-secondary education, whichever was greater. Implementing this proposal, Parliament passed the Federal-Provincial Fiscal Arrangements Act in March 1967. This Act authorized the transfer of specific percentages of federal revenue plus required cash from the federal treasury to the provinces for a five-year period commencing with the 1967-68 fiscal year.

The financial resources transferred to the provinces were \$422.3 million in 1967-68; estimates for succeeding years are \$532 million in 1968-69, \$649 million in 1969-70, \$771 million in 1970-71 and \$876 million in 1971-72. The program has been extended for two years, and the amount to be transferred to the provinces in 1972-73 is estimated at \$972 million.

Under the Adult Occupational Training Act the federal government, through the Department of Manpower and Immigration, takes full responsibility for financing the cost of training adults who are or should be in the labour force. The cost of providing primary, secondary and post-secondary education remains a provincial responsibility, although this last sector receives federal support for operating costs. If, in the opinion of a counsellor at a Canada Manpower Centre, it is in the best interest of the individual and of the economy for an adult to undertake training or retraining, it will be purchased by the federal government from a public or private training institution or from industry. The program also provides for payment of allowances to persons whose training programs have been arranged by a manpower counsellor. Payments range between \$30 and \$118 per week, depending on the individual's economic responsibilities.

The Capital Assistance Program was begun in 1961 under the Technical and Vocational Training Assistance Act and continued in 1967 under the Adult Occupational Training Act which set a limit on the total amount payable to each province. It provided assistance to provinces for building and equipping occupational training facilities and by March 31, 1971 the federal government had contributed nearly \$1,100 million toward costs incurred by the provinces for this purpose. In 1970, in order to speed up the construction of needed training facilities and aid the provinces with their cash management problems, the federal government and the provinces agreed to an accelerated phase-out of this program. The provinces received the remainder of their entitlements in 1970-71 and 1971-72, to be spent on vocational training facilities by March 31, 1975. A total of \$76 million was paid to the provinces in 1971-72 under the accelerated phase-out and the normal procedures.

Under the Canada Student Loans Act (RSC 1970, c.S-17), full-time students may borrow up to \$1,400 annually to a total of \$9,800. Loans are interest-free while the student is enrolled and for six months thereafter. Provision is made for the total amount allocated to this program to be increased year by year in proportion to the increase in enrolment in post-secondary institutions. The purpose of the loan plan is to assist those students who, for financial reasons, would otherwise be prevented from acquiring a post-secondary education or would not be able to devote full time to their studies. These loans may be made only on the basis of certificates of eligibility issued by the participating province. There is no upper or lower age limit for eligibility. Funds authorized by certificates of eligibility are issued by the chartered banks, the federal government guaranteeing the loans and paying the interest while the student is attending college. All provinces except Quebec participate; Quebec offers its own student assistance program for the benefit of residents of that province.

The Act provides for basic allocations for each province and also for supplementary allocations to compensate for differences in relative demand as between provinces, based on provincial population in the 18-24-year age group. The basic allocations for the year 1971-72 for participating provinces totalled \$87.3 million with authority for discretionary allocations up to \$37.6 million, making a total maximum of \$124.9 million authorized under the Act. Loans actually authorized amounted to \$91.8 million. In addition, federal payments to lending institutions in respect of interest on outstanding loans and other operational expenses amounted to \$23.3 million.

In 1966, the federal government inaugurated a program of massive financial support to the provinces to provide badly needed facilities for training professional personnel in health services. The Health Resources Fund Act (RSC 1970, c.H-4), administered by the Department of National Health and Welfare, authorized the establishment of a fund to assist financially in the planning, acquisition, construction, renovation and equipping of health training facilities, defined to mean any school, hospital or other institution for the training of persons in the health professions or any occupations associated with the health professions, or for conducting research in the health field; residential accommodation was excluded. The Fund was established in the amount of \$500 million, to be applied to costs incurred between January 1, 1966 and December 31, 1980; of that amount, \$400 million is available to the provinces on a per capita basis, \$25 million is available to the four Atlantic Provinces for joint projects, and \$75 million remains to be allocated by the Governor in Council. Contributions are payable to the provinces in amounts of up to 50% of the cost of projects approved by the Minister's Advisory Committee as part of a five-year plan for the development of health training facilities in a province.

During the five years of operation of this program, 1966-67 to 1970-71, the federal government paid \$143.2 million to the provincial treasuries in respect of approved projects. Projects financed under this program included training facilities in universities or institutions connected with, or operated by, schools of medicine, schools of nursing, including new regional schools of nursing in Ontario, and schools for nursing assistants, as well as facilities for vocational types of training at the higher educational levels.

Through the Canada Council, the federal government in 1957 provided an amount of \$100 million, half of which was to be distributed among the universities for specified building and equipment purposes, similar to the distribution of grants. Interest from the remaining \$50 million was to be used to assist in the development of the arts, humanities and social sciences, mainly through scholarships (see Section 7.4.3).

Other contributions are more indirect and include scholarships, research grants and reports or services of value to the schools. Research grants are made by the National Research Council, the Defence Research Board, the Department of National Health and Welfare, the Department of Manpower and Immigration and other agencies. Some departments — Agriculture and National Health and Welfare, among others — provide materials and publications of value in the school programs; and the National Museums of Canada, the National Gallery, the National Film Board and the Canadian Broadcasting Corporation contribute directly or indirectly to various school programs.

More directly, the federal government is responsible for the education of Indians on reserves, prisoners in penitentiaries, members of the Armed Services and their dependants and in-service training for permanent personnel. It also assists in citizenship training and other out-of-school informal education activities.

External education assistance. The Canadian International Development Agency is responsible for the operation and administration of the technical assistance program offered by the Canadian government to developing countries. The International Development Research Centre, Canadian-financed but international in character, supports and assists research into the economic and social problems faced by developing countries. The activities of both organizations are given in Chapter 4.

7.3 Statistics of schools, colleges and universities

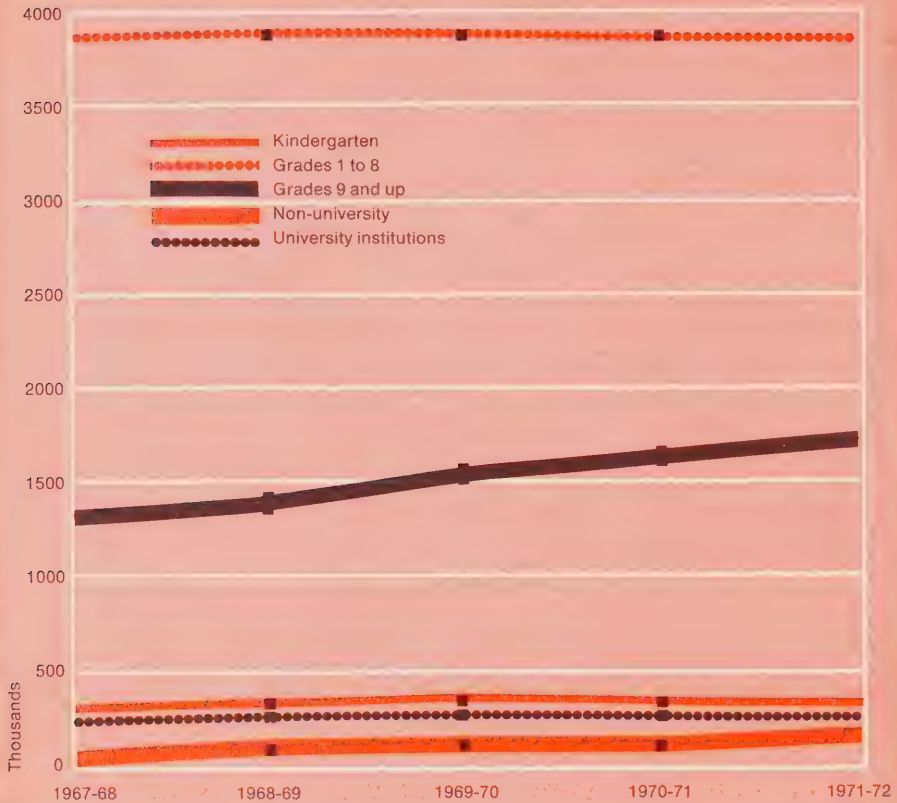
The first two tables concerning this Section give summary statistics of education at elementary, secondary and tertiary levels. Changes in enrolments at the three levels between 1967-68 and 1971-72 are shown in Table 7.1 and detailed data on numbers of schools, teachers and enrolment in the different types of institutions in each province and the territories are presented in Table 7.2.

7.3.1 Enrolments

7.3.1.1 Elementary and secondary enrolment

Elementary and secondary school enrolment combined increased 6% in the five-year period 1967-68 to 1971-72. Enrolment at the elementary level alone declined fractionally in the same period, a result expected from the low birth rates in the mid-1960s. However, at the secondary level enrolments were substantially higher by 26%, still reflecting the upsurge in the

Full-time enrolment in schools, colleges and universities, 1967-68 to 1971-72



numbers of students at the beginning of the 1960s resulting from the high birth rates prevailing during the war and postwar years. Secondary school enrolments are growing in every province almost without exception as pupils attending elementary school in the 1960s move into the higher grades. This increase is also related in part to the fact that students are staying in school longer and larger numbers of them are planning to go on to some form of post-secondary education. In addition, the greater diversification of courses offered which better prepare students for entry into the labour force and which more adequately fulfil the needs of the community, as well as the greater accessibility to further education, appears to affect school retention rates.

Table 7.3 shows enrolment in all elementary and secondary schools in Canada and in National Defence schools overseas in 1970-71 by grade, and Table 7.4 shows the same enrolment by age.

Only 2.5% of all elementary-secondary school students were enrolled in private schools in 1971-72. In almost every province, these schools are being integrated into the public school system, possibly because of the improving quality of public education throughout the country, rising costs associated with private education and increasing democratization of education. Table 7.5 shows that in the five-year period 1967-68 to 1971-72 enrolment in private schools in all provinces except Newfoundland and Ontario declined substantially, although there were year-to-year fluctuations within the period in most provinces. Quebec, however, reported a significant increase in 1971-72 over the previous year.

7.3.1.2 Post-secondary non-university enrolment

During recent years, enrolment in post-secondary non-university education has grown rapidly due partly to new organizational structures and partly to a range of new programs that comprise programs in teachers' colleges, hospital and regional schools of nursing, some universities, and especially in community colleges.

As shown in Table 7.6, in 1971-72 the 126,830 enrolments in post-secondary non-university education represented an increase of 8,018 students or 6.7% over the previous year. Of the total enrolment, community colleges and related institutions accounted for 75.7% and universities for 6.2%. Enrolments in teachers' colleges and in hospital and regional schools of nursing decreased between 1970-71 and 1971-72 due to more teacher training programs being given in universities and nursing programs in community colleges. It is expected that within a few years no teachers' colleges or hospital or regional schools of nursing will remain in operation.

Women represented almost half (49.4%) of all students enrolled in post-secondary non-university institutions in 1970-71, a decrease from 56% in 1966-67 and a significant decline from the 69% shown in 1961. The inclusion of new courses such as civil and marine engineering in community college programs, thereby reducing the predominance of the nursing and teacher training programs, and the transfer of teacher training in part to the universities, have contributed to the apparent decline. However, women still predominate in nursing, teacher training, medical and dental technology, and social welfare and recreation programs (Table 7.7).

As shown in Table 7.8, community colleges in all provinces except Newfoundland, Prince Edward Island, New Brunswick, Ontario and Manitoba offer university-transfer programs. In 1971-72, 54,826 students were enrolled in these programs, representing an increase of 12.8% over the previous year and of 580% over 1967-68, the extremely large increase over the five-year period being due almost entirely to the introduction of the CEGEP system in Quebec.

7.3.1.3 University enrolment and graduate degrees conferred

During the 1967-68 to 1971-72 period, full-time university enrolment in Canada increased by approximately 70,000 students, or 27%, although the rate of increase has declined notably in the past two years. The increase in 1971-72 over the preceding year was only 4.4% and in a few universities enrolment has actually decreased (Table 7.9). Over the five-year period, the number of women in universities increased by 40%, and in 1971-72 women accounted for 36% of all enrolments compared with 33% five years earlier. Quebec and Ontario, the most populous provinces, accounted for more than 60% of all university and college enrolments.

It should be noted that, in addition to the full-time university-grade enrolment, the number of students enrolled in pre-matriculation or university-grade courses on a part-time basis, either in the evenings, during summer session or by correspondence, was equal to more than half of the full-time enrolment in the regular winter session in 1970-71.

Table 7.10 shows that during the five-year period 1966-67 to 1970-71 the number of degrees granted continued to increase, bachelor and first professional degrees by 57%, masters' degrees by 83% and earned doctorates by 108%. The proportion of women receiving these degrees has been approximately the same in all provinces.

In 1970-71, as in 1961-62, a large percentage of women graduated in courses traditionally considered to be of interest to women (Table 7.11). More than 85% of the bachelor and first professional degrees conferred on women were in arts and fine arts, education, humanities and related subjects, library science, nursing, and social sciences and related subjects; on the other hand, the proportion of men receiving first professional degrees in these fields was significantly lower, and has increased only slightly, from 50% to 54%, over the ten-year period. The percentage of women to total first and professional degrees granted in law, pharmacy and architecture has shown some increase recently but the proportion of women receiving these degrees to total first and professional degrees conferred on women has not.

Women received 20.3% of all graduate-level degrees and diplomas awarded by the universities (Table 7.12). Further, women were awarded 21.5% of the diplomas conferred, 22% of the masters and 9.3% of the doctorates. In relation to first professional degrees, over 80% of the graduate degrees and diplomas conferred on women were in education, the humanities and related subjects, and the social sciences and related subjects; at the same time, 41% of the men graduated in science and related subjects.

Provincial percentages of the total Canadian population and provincial percentages of total degrees granted at all levels, 1970-71



Each year Canadian universities and colleges admit a large number of students from other countries of whom a growing proportion come from countries other than the United States and Britain. In the 1970-71 academic year, of 22,376 full-time students from all countries, 9,466 were from Commonwealth countries; in 1961-62, students from outside Canada numbered 7,251, of whom 3,294 were from the Commonwealth. Historically, most of the foreign students in graduate schools in Canada have been males; consequently, the number of such students should be considered, for example, when calculating the proportion of female enrolment and graduate degrees conferred on women to total enrolment and degrees granted. In 1970-71, male enrolments constituted 82.2% of the 22,376 students coming from other countries.

7.3.1.4 Registrations in continuing education programs

Course registrations in school board continuing education programs in 1970-71 were substantial, as shown in Table 7.13. In 1970-71, adult enrolment in these courses totalled 795,303 with the highest proportions being in academic, hobby skills and vocational courses, respectively, with 32.8%, 28.0% and 20.6% of the total. Many individuals taking these courses enrol in more than one subject, and it is estimated that the 795,303 registrations in school board continuing education programs represented 467,079 individual participants. Three provinces, Quebec, Ontario and British Columbia, accounted for 85.2% of the national total. Quebec led Canada's back-to-school movement in 1970-71 with 287,684 registrations. Fewer men than women participated in school board continuing education courses in 1970-71, numbering 324,084 or 40.6% of total registrations.

As shown in Table 7.14, correspondence courses represent another avenue by which adults may continue their education. Total registrations in 1970-71 numbered 117,374, representing an estimated 81,419 individual participants. Academic courses reported the largest registration, with 72.0% of the national total. Women accounted for 92.5% of total registrations in correspondence courses.

Table 7.15 shows that in 1970-71 universities offering non-credit courses to adults reported 205,178 registrations, representing 136,785 individual participants. Professional development courses, in which health sciences and business and management had the highest

enrolment, accounted for about 42% of the 205,178 registrations; about 40% were in general interest courses, of which fine arts appreciation and instruction, and human relationships and leadership were the most popular; the remaining 18% were in association certificate courses of which accounting made up almost half.

Table 7.16 shows that part-time university and college enrolment in 1970-71 was also quite high; 89.5% of the students were enrolled in undergraduate degree, diploma and certificate courses, 9.1% in graduate programs, and 1.4% in non-university-level diploma or certificate courses. Women accounted for 41.5% of the part-time students in undergraduate programs, 23.6% of the part-time students in graduate programs and 31.3% of those not preparing for university-awarded degrees, diplomas or certificates.

7.3.2 Teaching staff

7.3.2.1 Elementary and secondary schools

During the 1950s and 1960s, the number of teachers in publicly controlled schools in Canada increased from 85,152 to 249,078, or by 193%. However, this steeply upward trend is not expected to continue during the next few years. At the elementary level the increase will be limited because of the predicted decline in school enrolment and, although secondary school student numbers are growing, the teaching staff at that level will not increase proportionately because of the current higher student-teacher ratio and greater teacher specialization.

As shown in Table 7.17, in 1970-71 male teachers at the secondary school level significantly outnumbered female teachers in nine provinces (data for Ontario are not available) but the opposite is true for teachers at the elementary level.

The median salary in 1970-71 for all teachers (excluding Quebec and Ontario) was \$7,688, an increase of 291% over the median salary of \$1,965 in 1949-50. The rate of increase from one year to the next during the two decades fluctuated considerably, ranging from 2.4% in 1962-63 to 9.7% in 1968-69.

It should be noted that variations in median salaries do not necessarily indicate variations in the salary schedules on which teachers are being paid. Since salary scales are based on both years of education and years of teaching service, improvements in the teaching force based on either of these two factors could conceivably cause an increase in the median salary even though the salary scale remained constant. Thus, when the rise in the median is used for interprovincial or historical comparisons, the effects of other contributing factors should be taken into account.

The median salary of men teachers is higher than that of women teachers at both the elementary and secondary levels for all provinces except Quebec and Ontario. Although, proportionately, the women teachers have more years of experience, a greater proportion of the men teachers are university graduates. However, the proportion of teachers, both men and women, with university graduation has been rising steadily over the past few years and this trend is expected to continue and should result in a corresponding decrease in the present salary differential.

7.3.2.2 Post-secondary non-university schools

The number of instructors in community colleges and related institutions in nine provinces (excluding Quebec) was 4,434 in 1969-70 and the number in all provinces was 9,459 in 1970-71. Quebec alone reported 4,500 or 47.6% of all community college teachers; this can be explained by the large number of CEGEPs in that province. The figure for each province in 1970-71 is given in Table 7.2.

The number of full-time university teachers in Canada during the period 1967-68 to 1971-72 has risen by 70%, from an estimated 18,000 to 25,724, although the rate of annual increase has declined from 15.0% to 4.5%. It should be noted, however, that these figures are based on returns from institutions representing 50% to 90% of the enrolment, depending on the academic year, and are consequently estimates.

As shown in Table 7.18, the median salary of university teachers in 1970-71 was \$14,248, an amount 7.4% higher than in the previous year. By rank, the median salary for deans was \$25,950, up 7.8% from the previous year; for professors, \$21,504 or 8.2% higher; for associate professors, \$16,057 or 7.0% higher; for assistant professors, \$12,701 or 7.3% higher; and for instructors and lecturers, \$10,002 or 5.9% higher.

Over the five-year period 1966-67 to 1970-71, the median salary of university teachers increased from \$10,550 to \$14,248, which represents an increase of 35%. During the same

period, the increase in median salary by rank was 37% for deans and about 34% for all others.

7.3.3 Expenditures

Table 7.19 contains information on expenditures in Canada by source of funds. Responsibility for the organization and administration of public education lies with the provincial and territorial governments; in exercising this capacity they represent the main source of funds for education. In 1970, 57.0% of all funds for education came from provincial governments, followed by municipal governments with 23.8%; federal government, 10.8%; other sources, 4.3%; and fees, 4.1%.

In 1970, expenditures on education totalled \$7,408.9 million, an increase of 78.3% over the 1966 figure of \$4,155.2 million. The proportion of funds provided by the provincial government on education has increased during the period, while the proportions derived from the federal government, municipal governments, fees and other sources have decreased.

In Table 7.20, expenditures on education are given by level of study. Elementary and secondary education accounted for \$4,805.8 million or 64.9% of the total. Expenditures on post-secondary education followed with 28.9% and on vocational training with 6.2%.

In 1970, expenditures for vocational training were 86.5% higher than they were in 1966. During the same period expenditures for elementary and secondary and for university levels increased by 72.2% and 91.8%, respectively.

7.4 Cultural education

7.4.1 Art schools and galleries

There has been considerable expansion of education opportunities in the arts in Canada in the past few years. Courses of artistic content have increased to some extent in the universities but the main growth has taken place in the newly established community colleges of Ontario and the *collèges d'enseignement général et professionnel* (CEGEPs) of Quebec. These colleges offer both the transfer diploma which allows the student to continue his studies at university, and the vocational diploma with which the student may seek employment in his area of specialty. There are also independent institutions, such as the Artists' Workshop in Toronto, the National Theatre School in Montreal and the Kootenay School of Art in Nelson, BC, where instruction is given with or without diploma awards.

Table 7.21 shows the facilities available for the study of the arts in Canada in 1969-70 as reported by 39 universities, 67 colleges and 15 independent institutions.

7.4.1.1 Fine arts schools, galleries and organizations

Fine arts (architecture, painting and drawing, commercial and decorative arts, graphics, ceramics and sculpture) appears as an elective subject of the faculty of arts in a number of universities, where it may be taken as one of five, six or more subjects for a year or two. Eight universities offer a Bachelor of Fine Arts degree: Mount Allison University, Sir George Williams University, University of Windsor, University of Manitoba, University of Alberta, University of Calgary, University of British Columbia, and the University of Victoria. Twelve universities offer a Bachelor of Arts degree with a major in Fine Arts: Université de Moncton, McGill University, Sir George Williams University, University of Ottawa, University of Toronto, York University, McMaster University, University of Guelph, University of Western Ontario, University of Windsor, University of Saskatchewan, and the University of British Columbia.

There are many colleges and schools of art with varying academic requirements for admission. These offer diploma or certificate courses and are concerned largely with the technical development of the artist. Among those widely known are: Halifax – Nova Scotia College of Art; Quebec City – École des Beaux-Arts; Montreal – École des Beaux-Arts, Institut des Arts Appliqués, School of Art and Design of the Montreal Museum of Fine Arts; Toronto – Humber College of Applied Arts and Technology, Ontario College of Art, Artists' Workshop, Hockley Valley School, The New School of Art; Brampton – Sheridan College of Applied Arts and Technology; Kitchener – Doon School of Fine Arts; Winnipeg – University of Manitoba School of Art; Regina – School of Art, Regina Campus, University of Saskatchewan; Banff – Banff School of Fine Arts; Calgary – Alberta College of Art, Southern Alberta Institute of Technology; Nelson – Kootenay School of Art; Vancouver – Capilano College, Vancouver School of Art; Victoria – University of Victoria.

Courses vary in length with the requirements of the individual student but may extend

over as many as four years. In some of these schools fine crafts as well as fine arts are taught. Summer schools of art are sponsored by some of the foregoing institutions, by universities and by various independent groups. One of the more important summer schools is the Banff School of Fine Arts, affiliated with the University of Calgary.

Public art galleries in the principal cities perform valuable educational services among adults and children. Children's Saturday classes, conducted tours for school pupils and adults, radio talks, lectures and concerts are features of the programs of the various galleries. Many of these institutions supply travelling exhibitions for their surrounding areas or range even farther afield. Several organizations such as the Maritime Art Association, the Atlantic Provinces Art Circuit, the Western Canada Art Circuit, the Art Institute of Ontario, the Art Gallery of Ontario and the new *Fédération des centres culturels du Québec* have been founded to carry out this sort of travelling program on a regional basis. On a smaller scale, art circuits are organized to serve certain areas such as those around St. John's, Nfld., Charlottetown, PEI, Trois-Rivières and Hull, Que., and Winnipeg, Man. The National Gallery of Canada conducts a nation-wide program of this nature and is one of the largest art-circulating agencies in North America. Several galleries maintain an art-rental service.

Among the principal public art galleries are:

Fathers of Confederation Art Gallery and Museum, Charlottetown, PEI

Beaverbrook Art Gallery, Fredericton, NB

Musée du Québec, Quebec, Que.

Montreal Museum of Fine Arts, Montreal, Que.

Musée d'Art Contemporain, Montreal, Que.

National Gallery of Canada, Ottawa, Ont.

Art Gallery of Ontario, Toronto, Ont.

Art Gallery of Hamilton, Hamilton, Ont.

Art Gallery of Windsor, Windsor, Ont.

Kitchener - Waterloo Art Gallery, Kitchener, Ont.

Public Library and Art Museum, London, Ont.

Sarnia Public Library and Art Gallery, Sarnia, Ont.

Winnipeg Art Gallery, Winnipeg, Man.

Moose Jaw Art Gallery and Museum, Moose Jaw, Sask.

Saskatoon Gallery and Conservatory Corporation, Saskatoon, Sask.

Edmonton Art Gallery, Edmonton, Alta.

Vancouver Art Gallery, Vancouver, BC

Art Gallery of Greater Victoria, Victoria, BC.

Other important collections of art are housed in arts councils and university galleries.

Among the university galleries are:

St. John's Memorial University Art Gallery, St. John's, Nfld.

Anna Leonowens Gallery, Nova Scotia College of Art, Halifax, NS

Dalhousie University Art Gallery, Halifax, NS

Creative Art Centre of the University of New Brunswick, Fredericton, NB

Owens Museum of Fine Arts, Mount Allison University, Sackville, NB

Université de Moncton, Moncton, NB

Séminaire des Clercs de St-Viateur, Joliette, Que.

Université Laval, Quebec, Que.

McGill University, Montreal, Que.

Sir George Williams University Art Gallery, Montreal, Que.

Agnes Etherington Art Centre, Queen's University, Kingston, Ont.

Canadian Gallery of the Royal Ontario Museum, Toronto, Ont.

York University, Toronto, Ont.

University of Waterloo Art Gallery, Waterloo, Ont.

McIntosh Memorial Art Gallery, University of Western Ontario, London, Ont.

University of Manitoba, Winnipeg, Man.

Norman Mackenzie Art Gallery of the University of Saskatchewan, Regina, Sask.

University of Saskatchewan, Saskatoon, Sask.

University of Alberta, Edmonton, Alta.

University of Calgary, Calgary, Alta.

Fine Arts Gallery of the University of British Columbia, Vancouver, BC.

Five of the more important galleries connected with arts councils are the St. Catharines and District Arts Council, St. Catharines, Ont., the Glenhyrst Arts Council, Brantford, Ont., the Department of Fine Arts, McMaster University, Hamilton, Ont., the Brandon Allied Arts Centre, Brandon, Man., and the Art Gallery of the Calgary Allied Arts Centre, Calgary, Alta.

Among the leading fine arts organizations of national scope, exclusive of museums and art galleries, are: Association of Canadian Industrial Designers, National Design Council, Canadian Conference of the Arts, Canadian Craftsmen's Association, Canadian Society for Education through Art, Canadian Group of Painters, Canadian Guild of Potters, Canadian Handicrafts Guild, Canadian Museums Association, Canadian Society of Graphic Art, Canadian Society of Painter-Etchers and Engravers, Canadian Society of Painters in Water Colour, Canadian Society of Landscape Architects, Federation of Canadian Woodcarvers, Royal Canadian Academy of Arts, Royal Architectural Institute of Canada, Sculptors' Society of Canada, Town Planning Institute of Canada, Canadian Centre for Films on Art, and Community Planning Association of Canada.

7.4.1.2 The National Gallery of Canada

The beginnings of the National Gallery of Canada are associated with the founding of the Royal Canadian Academy of Arts in 1880. The Marquis of Lorne, then Governor General, had recommended and assisted in the founding of the Academy and among the tasks he assigned to that institution was the establishment of a National Gallery at the seat of government. Until 1907 the National Gallery was under the direct control of a Minister of the Crown but in that year, in response to public demand, an Advisory Arts Council consisting of three persons outside government was appointed by the government to administer grants to the National Gallery. Three years later, the first professional curator was appointed.

In 1913, the National Gallery was incorporated by Act of Parliament and placed under the administration of a board of trustees appointed by the Governor General in Council; its function was to encourage public interest in the arts and to promote the interests of art throughout the country. Under this management, the Gallery increased its collections and developed into an art institution worthy of international recognition. Today, a board of trustees, reporting to the Secretary of State, administers all the National Museums of Canada, including the National Gallery.

The Gallery's collections have been built up along international lines and give the people of Canada an indication of the origins from which their own traditions are developing. The collection of Canadian art, the most extensive and important in existence, is continually being augmented. Over 60% of all new acquisitions since 1966 have been Canadian. The present Canadian content of the permanent collections is: paintings, 79%; sculpture, 66%; prints, 17%; drawings, 61%; and all other acquisitions, 74%. There are now more than 11,600 works of art in the collections. Included are many Old Masters, 12 having been acquired from the famous Liechtenstein collection. The Massey collection was presented to the Gallery during 1946-50 by the Massey Foundation. There is a growing collection of contemporary art, prints and drawings, and diploma works of the Royal Canadian Academy. The services of the Gallery include the operation of a reference library open to the public containing more than 40,000 volumes and periodicals on the history of art and other related subjects.

In 1972, the Gallery's National Conservation Research Laboratory underwent change. It had been established in 1964 to provide technical information on works of art from public and private collections across Canada and to be responsible for the conservation of the national art collections. In addition, research was carried out on the effects of environment on works of art and on the durability of artists' materials. The latter role was given to the newly constituted Canadian Conservation Institute with the broadened responsibility of conducting research into methods of preserving, restoring and transporting all types of cultural objects, the training of specialists in these fields, and the provision of consultant services to museums. The new Institute remains a part of the National Museums of Canada. The National Gallery retains its conservation function, which was established long before the creation of the National Conservation Research Laboratory. This division of the Gallery has been designated as the Restoration and Conservation Laboratory.

An active program of exhibitions, lectures, films and guided tours is maintained for visitors to the Gallery in Ottawa. The interests of the country as a whole are served by circulating exhibitions, lecture tours, publications, reproductions and films prepared by the National Gallery staff. Promotion of and information on art films are handled by the Canadian Centre for Films on Art, and their distribution by the Canadian Film Institute. The Gallery promotes interest in Canadian art abroad by participating in international exhibitions such as the Biennials of Venice and Paris, and by preparing major exhibitions of Canadian art for showing in other countries. It also brings important exhibitions from abroad for showing in Canada.

7.4.1.3 Performing arts schools

Degree courses in music, the most widespread of the performing arts (which also include opera, drama, ballet and dance) are offered at a number of Canadian universities, listed as follows:

St. Francis Xavier University, Antigonish, NS — BA major
 Dalhousie University, Halifax, NS — BMusEd
 Mount Saint Vincent, Halifax, NS — BA (mus.)
 Acadia University, Wolfville, NS — BA major, LMus, and BMus
 Mount Allison University, Sackville, NB — BA major, BMus, BMEd
 Université de Moncton, Moncton, NB — BA (mus.)
 Université Laval, Quebec, Que. — LMus, BMus, DMus
 McGill University, Montreal, Que. — LMus, BMus, MMA (musical arts)
 Université de Montréal, Montreal, Que. — LMus, BMus, and DMus
 Carleton University, Ottawa, Ont. — BA (mus.)
 Queen's University, Kingston, Ont. — BMus, BA major
 University of Toronto, Toronto, Ont. — BMus, BA (mus.), ArtDipMus, LicDipMus, MusBac (performance), MusBac (history, literature, composition, education), MusM, MA (musicology), MusDoc, PhD (musicology)
 McMaster University, Hamilton, Ont. — MusBac
 University of Western Ontario, London, Ont. — BA major, MusB, MA (musicology), and MusM
 University of Windsor, Windsor, Ont. — BA (mus.) and BMus
 University of Manitoba, Winnipeg, Man. — BA major, AMM, LMM and BMus
 Brandon University, Brandon, Man. — BMus (education or performance)
 University of Saskatchewan, Regina, Sask. — AMUS, LMUS, BMus, BMusEd
 University of Saskatchewan, Saskatoon, Sask. — BA major, BMus, BMusEd
 University of Lethbridge, Lethbridge, Alta. — BA (mus.)
 University of Alberta, Edmonton, Alta. — BMus and MMus
 University of Calgary, Calgary, Alta. — BMus
 University of British Columbia, Vancouver, BC — BA major, BMus and MMus
 University of Victoria, Victoria, BC — BMus, MMus, PhD (mus.).

Advanced instruction in music is also given at the Conservatoire de Musique et d'Art Dramatique in both Montreal and Quebec. Opera may be studied at the Royal Conservatory Opera School of the University of Toronto where advanced students work in close collaboration with the Canadian Opera Company and also at the Conservatoire de Musique et d'Art Dramatique and at the Banff School of Fine Arts (summer) at Banff, Alta., an affiliate of the University of Calgary.

Degree courses in drama are offered at the following universities:

Université de Moncton, Moncton, NB — BA (art dramatique)
 Sir George Williams University, Montreal, Que. — BFA (drama)
 Queen's University, Kingston, Ont. — BA (drama)
 University of Toronto, Toronto, Ont. — MA (drama)
 University of Windsor, Windsor, Ont. — BA (drama), BFA (dramatic art)
 University of Saskatchewan, Regina, Sask. — BFA (drama)
 University of Saskatchewan, Saskatoon, Sask. — BA (drama), MA (drama)
 University of Alberta, Edmonton, Alta. — BA (drama), MA (drama), BFA (drama), MFA (drama, design or directing)
 University of Calgary, Calgary, Alta. — BFA (drama)
 University of British Columbia, Vancouver, BC — BA (theatre), MA (theatre)
 University of Victoria, Victoria, BC — BFA (theatre).

Advanced instruction in drama is also given during the summer at the Banff School of Fine Arts. The National Theatre School of Canada offers complete practical training for talented students; it is bilingual, courses being held at Montreal, Que., from October to June. Three years are required for the acting course and two for technical and production studies.

The National Ballet School at Toronto is the only residential ballet school in Canada. It offers academic studies together with practical instruction. Professional instruction is also offered by two other major Canadian ballet companies, *Les Grands Ballets Canadiens*, Montreal, and the Royal Winnipeg Ballet, Winnipeg, and advanced ballet training is given during the summer at the Banff School of Fine Arts.

7.4.2 Museums

The museums of Canada, as elsewhere, range from small, locally gathered, historical artifacts and objects to large government-operated institutions which collect, classify and

display such objects as may be necessary to study and disseminate knowledge of natural history, human history, science and technology, with special but not exclusive reference to Canada. Many of these larger museums, especially the National Museums of Canada and the Royal Ontario Museum, have a long, distinguished heritage in research and publication of scholarly works and serve an important role as educational and cultural centres. In this area they have an advantage over other agencies of education in that they are able to provide, for study and exhibition, actual, original objects as well as descriptions and pictures of such objects. They offer many educational services to the public through exhibits, guided tours, lectures and scientific and popular publications.

7.4.2.1 Educational programs

In 1970, 140, or 19.8%, of all museums and related institutions in Canada maintained educational programs. The following museums have staff members who are specifically charged with organizing programs in education and providing extension services: Nova Scotia Museum, Halifax, NS; McGill University museums, Montreal, Que.; National Museums of Canada, Ottawa, Ont.; Royal Ontario Museum, Toronto, Ont.; and Saskatchewan Museum of Natural History, Regina, Sask.

Other museums that conduct educational and extension programs using the regular curatorial and administrative staff are: The New Brunswick Museum, Saint John, NB; Musée du Québec, Québec, Que.; Manitoba Museum of Man and Nature, Winnipeg, Man.; British Columbia Provincial Museum, Victoria, BC.

Direct work with schools may involve the holding of classes within the museum or visits of museum lecturers, with exhibits, to the schools. More informal are the guided tours for visiting school classes, loans of specimens, slides, filmstrips or motion picture films to schools, and the training of student-teachers in the educational use of the museum. For children, a number of museums have special programs not directly associated with school work including Saturday lectures and film showings, activity groups, nature clubs and field excursions. At the higher educational level, museum field parties provide research training to university students in many disciplines and museum staffs act as professional consultants, answer a host of inquiries on scientific and technical subjects, and serve as consultants or advisers to foreign scholars and institutions. There were 288, or 40.7%, of the museums and related institutions conducting research related to collections in 1970.

For adults, museums offer lectures, film shows and guided tours, the latter usually available throughout the year. Staff members may give lectures to service clubs, church groups, parent-teacher associations and hobby clubs. The latter, such as naturalists' groups, mineral clubs and astronomy societies, may be allowed to use the museum as their headquarters. Travelling exhibits are prepared for showing at local fairs, historical celebrations and conventions. Some Canadian museums have conducted regular radio or television programs and others have made occasional contributions. Some historical museums stage annual events during which the arts, crafts or industries represented by the exhibits are demonstrated to the public.

Table 7.22 presents results of a survey completed by Statistics Canada for the year 1970. Some 55 million visits were made to 708 Canadian museums, art galleries and related institutions, including the National Museums of Canada; of these, 2.9 million were in groups arranged by schools, churches and other organizations. The institutions were staffed by 3,793 full-time and 3,157 part-time employees, and 6,515 volunteers. Their operating expenditures reached almost \$40 million, and only 38.5% charged admission fees.

7.4.2.2 National Museums of Canada

The responsibilities of a great museum include collecting, preserving and storing objects related to the various disciplines within its area of activities. Of equal importance is the research carried out by specialists in these fields and the publication of their findings. Museums exhibit artifacts from their collections in attractively designed displays to illustrate the scientific origins of the various subjects. This, however, is only part of a museum's extensive education program, which extends to lectures, publications, inquiries, consultations, workshops, guided tours for children and adults alike, travelling exhibits, loans, library services and radio and television programs. The National Museums of Canada present all these facets for the enjoyment and education of the people of Canada.

The staff common to the National Museums of Canada and the National Gallery

concerned with exhibition and educational, technical, administrative and financial functions, totalled 423 during 1971-72, including six executives and 84 scientific and professional, 163 administrative and administrative support, 89 general technical and 81 operational employees. During the 1971-72 fiscal year, the Victoria Memorial Building, which houses the Museums of Natural Sciences and of Man, was closed for renovations and therefore not available to visitors; the National Gallery had about 405,400 visitors, the Museum of Science and Technology, more than 500,000 visitors, the National Aeronautical Collection, which is part of the latter Museum, about 134,000 visitors, and the Canadian War Museum, nearly 381,000 visitors.

The early history of the National Museums was described in the *1972 Canada Year Book*, pp. 418-419. Recent activities of the museums are outlined in the following paragraphs; activities of the National Gallery may be found in Section 7.4.1.2.

The National Museum of Natural Sciences contains divisions of botany, zoology, geology and palaeontology. During the year 1971-72, thousands of specimens were added to its collection as a result of field trips, purchases, donations and exchanges.

The Museum staff was engaged during the year in 65 major research projects and 25 projects of lesser importance, and supported such research as the Polar Continental Shelf Project and the Hudson and Sackville expeditions undertaken by the Department of Energy, Mines and Resources. The Museum supports projects undertaken in universities by staff members or by research associates and provides financial assistance, research facilities and field work for several National Research Council post-doctoral fellows.

The Victoria Memorial Museum building, which houses the Museum of Natural Sciences, was closed in November 1969 for complete renovation and since then the staff has been intensively engaged in planning and designing the new display halls that are now being constructed. When the building reopens, the Museum will be in a position to more completely fulfil its mandate to inform and educate the public.

The Canadian Oceanographic Identification Centre of the Museum processes some 360,000 specimens each year, mainly for other departments of government.

The Museum staff produces five series of publications and assists in the preparation of audio-visual material.

The National Museum of Man contains divisions of Archaeology, Ethnology and History as well as the Canadian Centre for Folk Culture Studies and the Canadian War Museum. During the year ended March 31, 1972, the Archaeological Survey of Canada continued work on some 100 sites across Canada, increasing emphasis being given to salvaging sites in immediate danger of being destroyed by human or natural forces; other government departments also have recognized the importance of this work and have made financial contributions to the Museum in support of it. Major projects on the prehistory of Canada's North and of the west coast of Alaska dominated the non-salvage work, along with the surveying and testing of other areas. The Ethnology Division continued its field studies with the Golden Lake Algonquin, the Koyukuk River Athapascans, the Odanak Abenakis, the Carrier - Chilcotin people of British Columbia and the Cree and Chipewyans of northern Saskatchewan, but its activities were dominated by the Museum exhibition program and museology training. As in archaeology, salvage or rescue work continued to be the main focus of effort, as knowledge of traditional life dies with the older Indian and as man and nature destroy archaeological sites. The staff of the History Division, with the assistance of contract researchers, continued studies on Canadian society and material culture since the beginnings of European colonization, including such subjects as public attitudes toward Indians in western Canada before World War I, coal mining in Nova Scotia, the status of women in Upper Canada, lighting devices prior to electricity, Windsor chairs, Canadian-made stoves, and work of Canadian silversmiths. In addition, studies were continued as part of planning for permanent exhibits on such broad historical themes as urban life, rural life, social structure, social change, and man and his environment in Canada. The Canadian Centre for Folk Culture Studies awarded many contracts related to the folklore of Canadian ethnic groups. Among the groups studied are the Sikhs and Chinese in British Columbia, the Germans in Manitoba, the French and Ukrainians in Manitoba and Saskatchewan, and the Negroes in Nova Scotia.

The Canadian War Museum was refurbished and the Annex prepared for reopening in mid-1971 with new exhibits on the evolution of artillery, the development of armoured

fighting vehicles and the air defence of Britain in World War I. Militaria and memorabilia continued to come from private donors and many new articles (vehicles, medals and uniforms) have been added.

The Communications Division plans and co-ordinates the interpretation and exhibition program in the permanent exhibit halls and organizes travelling exhibitions; 13 exhibitions are now in circulation, including the History of Early Domestic Lighting in Canada display for which requests have come from all across the continent, and one on Eskimo prehistory now circulating in the Northwest Territories. Plans for all permanent and temporary exhibit halls have been expanded and designs for the orientation, archaeology and ethnology halls were completed by the end of 1971 and are now being implemented and given physical form.

Since the closing of the Victoria Memorial Museum in November 1969 for extensive renovation and display redevelopment, exhibit planning and other display work for the seven major halls and for the travelling exhibition program has continued to occupy a large portion of staff time, reshaping as well as curtailing to some degree research and field work. Staff scientists attended a number of national and international conferences, lectured widely, acted as advisers for other institutions and countries, taught university courses, trained students, participated in planning exhibits in other museums and assisted with projects in other Canadian centres. The Museum's publication program has been substantially expanded, the Mercury series (in which manuscripts by Museum scientists are released in photocopy form in order to place them in the hands of students and faculty members as fast as possible) being particularly well received; and the Bulletin series of highly professional scientific writings was enlarged.

The National Museum of Science and Technology has the function of a cultural-educational institution, designed to bring scientific literacy to the visiting public and to familiarize them with the language, events and history of science. In the Museum, visitors are confronted with displays which, by means of artifacts and texts, demonstrate scientific principles and correlate them with the development of technology. Particular emphasis has been given to the technologies of ground transportation, aviation, agriculture, shipping and industry which have been so closely fused to the history of this nation.

The Museum displays are colourful and inventive, designed to involve people in the learning process. Visitors are asked to participate in experiments and in making things work; to explore the technological park; to ride in a double-decker bus or down a track in a gondola car; to push a button or wind a crank to learn some law of physics; or to sit in the driver's seat of a farm tractor or a giant steam locomotive. Museum collections are made available to other museums in Canada and abroad, with a view to bringing the story of science and technology to the widest audience possible. The National Aeronautical Collection, part of the Museum, is located in aircraft hangars at Rockcliffe, east of Ottawa. There are displayed some 50 of Canada's national collection of over 90 aircraft, together with engines and other artifacts relating to the development of aviation, so important in Canada and to which so many Canadian contributions have been made.

The Museum sponsors lectures on the history of science and technology. A systematic program of school tours for children in Ontario and Quebec has been developed to fit in with curriculum requirements. Broadly speaking, all programs are built around three general themes relating to national development — how man has overcome space and time in this vast land by various methods of transportation and communication; how man has changed his environment with science and technology and the tools he has built and used; and how man's living habits have changed as he moved from sod hut and log cabin existence to his present sophisticated environment. The Museum is planning publications to expand the content of its exhibits and to give popular accounts of Canadian scientific and technological achievements. The emphasis in the Museum is on being a bright, alert and lively showplace of the development and trends in modern science. New exhibits and temporary exhibits are added each year to make an approximate 20% annual change.

The National Museum of Science and Technology of Canada is in the vanguard of modern museums throughout the world which are emphasizing cultural-educational functions in lieu of traditional museum functions. Visitors to this Museum can have a meaningful experience in Canadian scientific and technological developments as well as in world advancements in these fields.

7.4.3 The Canada Council

The Canada Council was created in 1957 by an Act of Parliament, to "foster and promote the study and enjoyment of, and the production of works in the arts, humanities and social sciences". It carries out its task mainly through a broad program of fellowships and grants of various types. It also shares responsibility for Canada's cultural relations with other countries in co-operation with the Department of External Affairs. The Council is made up of a chairman, a vice-chairman and 19 members, all appointed by the Governor in Council. Its administration is headed by a director and an associate director, also appointed by the Governor in Council, and it meets at least five times a year.

Within the limits of the Canada Council Act, the Council enjoys a large measure of autonomy, setting its own policies and developing and carrying out its own programs in consultation with the community of artists and scholars. The Council reports to Parliament through the Secretary of State and also appears before the Standing Committee on Broadcasting, Film and Assistance to the Arts.

The Council's income is derived from three sources: an annual grant of the Canadian government which amounted to \$26.3 million for the year ended March 31, 1972; the Endowment Fund established by Parliament when it created the Council, which is expected to yield \$5 million annually; and private funds willed or donated to the Council and used in accordance with the wishes of the donors.

Assistance to the humanities and social sciences accounts for the larger part of the Council's budget, an amount of \$19.7 million in 1971-72. In support of research training, the Council awarded 2,395 doctoral fellowships totalling \$10.9 million; for research work, 263 leave and research fellowships totalling \$1.9 million and \$3.7 million in research grants; for research communication, a total of \$1.1 million in assistance to learned meetings, visiting professors, attendance of Canadian scholars at international conferences, and publication of learned journals and scholarly manuscripts. Through the Canadian Horizons Program, the Council spent \$339,000 to assist in projects to make Canada's cultural heritage better known to the public.

In the arts, the Council spent \$12.3 million of which \$1.7 million was used to finance some 780 grants, bursaries and awards to individuals in the various art forms, and \$10.3 million was applied to grants to organizations, including \$2.7 million for music, \$3.8 million for theatre, \$1.9 million for dance and opera, \$1.4 million for the visual arts and \$476,000 for writing and publication.

The Canada Council administers, on behalf of the Canadian government, part of a program of cultural exchanges with France, Belgium, Switzerland, the Federal Republic of Germany, Italy, the Netherlands and the Latin American countries, under which it awarded fellowships and grants totalling \$823,000 to citizens of those countries in 1971-72. The Council also administers the funds of the Canadian Cultural Institute in Rome, created in 1967 by an agreement between Canada and Italy. The Institute's income is used to provide a small number of fellowships for Canadian artists and scholars wishing to work or study in Italy. The Izaak Walton Killam Memorial Awards of the Canada Council were inaugurated in 1967 with funds from the Killam estate. These awards go to support a few scholars of exceptional ability engaged in research projects of far-reaching significance. In 1971-72, there were 21 awards made under this program, totalling \$580,000.

Under its power to "make awards to persons in Canada for outstanding accomplishments in the arts, humanities or social sciences", the Council annually awards three \$15,000 Molson prizes financed by a fund provided by the Molson Foundation. The Governor General's Literary Awards, financed by the Council, are awarded annually to six Canadian writers.

The Canada Council Act provides for certain functions in relation to the United Nations Educational Scientific and Cultural Organization. It has accordingly established a National Commission for UNESCO and provides its secretariat and budget. As an agent of the Council, the Canadian Commission for UNESCO co-ordinates UNESCO program activities abroad and administers a modest program in furtherance of UNESCO objectives.

7.4.4. Provincial assistance to the arts

Provincial governments, as well as other levels of government and industry, have during the past few years become more and more aware of the significance of the arts in the life of the community. All provinces except Newfoundland, Prince Edward Island and New Brunswick

now give some form of financial assistance to artists (writers, poets, painters and sculptors), cultural organizations or community councils. The assistance provided by each province is described in the following paragraphs.

Nova Scotia. This province has no specific legislation authorizing financial assistance for cultural advancement but the Department of Education, the Department of Finance and several other departments provide grants to a number of organizations. Payments are made under the Provincial Finance Act from departmental appropriations.

In the year ended March 31, 1971, grants by the Department of Education went to the Neptune Theatre, \$85,000; the Atlantic Symphony Orchestra, \$45,000; the Nova Scotia Museum of Fine Arts, \$15,000; the Maritime Conservatory of Music, \$7,500; the Nova Scotia Drama League, \$5,400; the Nova Scotia Festival of the Arts, \$7,000; the Nova Scotia Talent Trust, \$2,000; the Halifax Music Festival, \$500; and the Canadian Theatre Centre, \$750. Department of Finance grants were given to the Atlantic Symphony Orchestra, \$50,000; the Neptune Theatre Foundation, \$7,600; the Nova Scotia Museum of Fine Arts, \$15,000; and the Theatre Arts Festival International, \$15,000. The Department of Finance also provided a grant of \$2,000 to the Antigonish Highland Society (sponsors of the Antigonish Highland Games), and grants of \$1,000 each to the Festival of the Strait, the Pictou Lobster Carnival and the Nova Scotia Fisheries Exhibition and Fishermen's Reunion.

The Department of Trade and Industry in the same year gave a grant of \$2,000 to the Annapolis Valley Blossom Festival, and a grant of \$1,000 to the Acadian Festival of Clare. The Fine Arts and Handcrafts Activity of the Adult Education Program of the Department of Education operated under a budget of \$138,000 and disbursed small grants for instruction purposes to cultural organizations in the amount of \$3,400. The Nova Scotia Museum Activity of the Cultural Resources Program of the Department of Education operated with a budget of \$542,000 and disbursed grants totalling \$66,600 to local museums and historical societies. Other expenditures of the Department of Education included: Nova Scotia provincial libraries, \$1,054,300; publication and information, \$183,000; television education, \$67,300; visual education, \$53,700; and radio education, \$4,600.

Quebec. The Quebec Department of Cultural Affairs was set up in 1961. Since September 1970, it has developed along cultural lines involving four roles which lend themselves to government intervention: conservation, training, creative activities and dissemination. Each of these roles is emphasized in the administrative organization of the department which has four main Branches. The Conservation Branch on the one hand looks after conservation of the Quebec heritage and the restoration of those assets which form part of it, and on the other hand makes them known. The Training Branch brings together the conservatories of music and of dramatic art for which it supplies administrative and pedagogical co-ordination. The Creative Arts Branch aims at the development of the arts in Quebec, notably in the fields of music, literature, theatre, graphic arts and film. The Information Branch attempts to bring to every Quebec citizen both access to and participation in Quebec cultural life. The Department also has a Cultural Relations Branch whose role is to plan and co-ordinate the cultural policies of the Department outside Quebec.

The Creative Arts Branch, whose role is to assist in the development of the arts in Quebec, offered scholarships and grants to various categories of organizations and citizens in the fiscal year 1971-72. Twelve organizations received grants totalling \$683,860. In the field of music 22 organizations, including the *Opéra du Québec* founded in 1971, received a total of \$1.1 million; 52 artists who took part in the creative arts exhibition of Quebec each received \$500. In the field of literature, 10 literary organizations, societies, etc., received a total of \$72,400 and three reviews received publication grants amounting to \$9,830. Aid to Quebec publishers for the publication of 50 books totalled \$65,250; the viability of this operation was assisted by the purchase of books amounting to \$9,830. The Department has singled out the talent of one author in awarding the prestigious *Prix David* (\$5,000) and one scientist has received the Science Prize for the same amount. Twenty organizations, companies, etc., working in the field of theatre received \$923,000 for operational purposes. The aid to creative arts service allocated grants amounting to \$145,500 to 52 creative people in six fields, and in a seventh, grants amounting to \$115,000 were given to two organizations.

The Training Branch, which administers seven conservatories of music and two conservatories of dramatic art, made grants to seven musical training associations for a total of \$84,000.

The Information Branch, whose role is to enable Quebecers to have access to and participate in Quebec as well as world-wide culture, in addition to making grants of \$183,000 to 18 organizations and cultural centres, also gave financial assistance for 250 cultural presentations at a cost of \$190,627. In addition, a total of \$1.6 million was distributed in grants to 73 municipal libraries, 33 library associations and three central lending libraries; five librarians' associations received grants totalling \$28,500.

In the field of conservation, \$26,000 was paid out to various historical societies and \$52,246 to seven archaeologists and four scientists. Considerable amounts granted to the National Library of Quebec, the National Archives, the Quebec Museum and the Museum of Contemporary Art allowed these institutions to increase their collections and to acquire new works, and the number of visitors to these institutions has constantly increased. The Department also spent a total of \$477,484 during the fiscal year ended March 31, 1972 on preservation and restoration of historic monuments.

Place Royale in Quebec, the cradle of Canada, has gradually grown out of the ruins as a result of a Canada - Quebec agreement. As at March 31, 1972, \$7.1 million had been spent since the beginning of the project for acquisition of properties, restoration, professional fees (architects, engineers, lawyers, etc.) and for the administration of the project. At that date, Quebec had received \$3.2 million as the federal government's share in the project.

Other branches of the Department carried out various functions: expanding the French fact in North America and increasing cultural exchanges between France and Quebec; supplying teaching and administrative services for the conservatories of music and dramatic art; organizing an efficient and coherent library service throughout the province; preserving the artistic and historical heritage of the province and of its monuments through technical assistance and through grants to property owners, and overseeing the administration of museums.

Ontario. The Ontario government passed legislation in 1962 (SO 1962-63, c.6) establishing the Province of Ontario Council for the Arts, which consists of a chairman, a vice-chairman and ten other members, all appointed by the Lieutenant-Governor in Council. It is the function of the Council to promote the study, enjoyment and production of works in the arts, and to that end may assist, co-operate with and enlist the aid of organizations whose objects are similar to the objects of the Council; provide through appropriate organizations or otherwise for grants, scholarships or loans to persons in Ontario for study or research in the arts in Ontario or elsewhere or to persons in other provinces or territories of Canada or any other countries for study or research in the arts in Ontario; and make awards to persons in Ontario for outstanding accomplishments in the arts.

In the year ended March 31, 1972, a total of \$2.1 million was dispensed by the Council in the form of grants or project assistance. Of that amount, \$1.8 million was given in grants to 176 organizations, the largest of them to the National Ballet Guild of Canada, \$175,750; the Toronto Symphony Orchestra Association, \$166,750; the Toronto Arts Foundation, \$159,500; the Canadian Opera Company \$125,000; and the Stratford Shakespearian Festival, \$115,000. Grants to individuals amounted to \$88,850, of which \$56,300 were film grants and \$32,550 literary grants.

Thirty-five programs were assisted, the largest amounts going to Operation-Resource, \$48,056; concerts and artists, \$35,759; North-Western Ontario Regional Program, \$27,684; Theatre-Ontario, \$23,025; touring and sponsorship program, \$15,971; Ontario Sound '71, \$15,224; and Regional Artist-in-the-classroom, \$12,868.

In addition, the Ministry of Colleges and Universities allocated in the estimates for the fiscal year 1972-73 the following amounts: \$4.6 million to the Royal Ontario Museum, \$3.4 million to the Province of Ontario Council for the Arts, \$900,000 to the Art Gallery of Ontario, \$377,400 to the Royal Botanical Gardens, \$225,000 to the McMichael Collection of Art, \$225,000 to the Elliot Lake Centre for Continuing Education, \$96,000 in grants to local museums and \$37,000 to the Ontario Heritage Foundation.

Ontario Place. This 96-acre entertainment and exhibition complex, located on three man-made islands in Lake Ontario on the Toronto waterfront, opened on May 22, 1971. During its 1972 season (May 20 to October 9) it had 2,350,471 visitors, about 25% of whom came from outside Ontario, primarily from the United States.

The skills of Ontario film-makers were presented to 1,062,036 visitors in Cinesphere, the domed 800-seat theatre with a six-storey-high screen. Among the films shown were the

immensely popular IMAX-process film "North of Superior", and the IMAX-format spectacular "Labyrinth IV". IMAX is an Ontario-developed process which projects a 60x80-foot image on the giant screen, engulfing the audience in the sights and sounds of the picture.

In the Ontario Place Pavilion, multi-media exhibits created by Ontario writers, designers, artists and film-makers told the story of Ontario's past, present and future, using three-dimensional film, sound, slides and artifacts.

A new feature of the Ontario Place 1972 season was the Children's Village, which opened on July 2, 1972. This two-acre area offers over 20 novel play activities for children from pre-school to teens. A 40,000-sq-foot canopy permits fun and play, rain or shine.

The Forum, an 8,000-seat outdoor amphitheatre, presented a wide spectrum of entertainment during the summer season, from concerts by the Toronto Symphony, which attracted an estimated 130,000 people, to rock and jazz concerts, opera, Indian Days, country and western, and national cultural programs.

In addition to these attractions, Ontario Place offers a variety of restaurants, lounges and snack bars, a 320-boat marina, gift boutiques, land and water rides, and the distinguished Canadian World War II destroyer, HMCS Haida, which is permanently berthed at the site and may be visited during the Ontario Place season.

Manitoba. The Manitoba Arts Council was formed by legislation passed in 1965, providing for a chairman, vice-chairman and ten members appointed by the Lieutenant-Governor in Council, with the objective of promoting the study, enjoyment, production and performance of works in the arts, by assisting and co-operating with those organizations involved in cultural development; providing for grants, scholarships or loans to Manitobans for study or research in the arts and making awards to citizens of Manitoba for outstanding accomplishments in the arts. Working on a budget of \$304,000, the Manitoba Arts Council in the year ended March 31, 1972 made grants to 27 organizations, including \$56,300 to the Manitoba Theatre Centre, \$37,000 to Rainbow Stage, \$62,000 to the Royal Winnipeg Ballet and \$66,000 to the Winnipeg Symphony Orchestra.

The Manitoba Arts Council has served as the advisory body to the city of Winnipeg in distribution of its funds to assist cultural organizations, and worked closely with the business community in setting up the first Canadian Business and the Arts Conference, held in 1971.

Saskatchewan. In 1949, the Saskatchewan Arts Board was established by Act of the Legislature, with the stated aim of providing "opportunity for the people of Saskatchewan to participate in visual art, music, drama, literature, handicrafts and other cultural pursuits; to stimulate and encourage this participation and appreciation". The means of achieving these aims were left to the judgement of the Board.

The Saskatchewan Arts Board, funded by the provincial government but functioning independently, is composed of not less than seven nor more than 15 volunteer members appointed annually by the Lieutenant-Governor in Council. These members are from all parts of the province but represent no specific areas or any specific disciplines in the arts. The work of the Board is carried out by a staff of two consultants and three office personnel under an executive director. Experts in various fields of the arts are engaged for specific projects where their special talents are required.

Over the years, handicraft, visual and performing arts programs have been expanded to the point where in some areas they have reached the professional level. Workshops, lectures and seminars at an advanced level have been sponsored by the Board, and considerable assistance has been given to local arts and crafts organizations in sponsoring similar projects at a local level. In most cases, the Board is not an instigator but prefers to assist established organizations in carrying out their own programs.

A highly successful Saskatchewan Summer School of the Arts, operated annually by the Saskatchewan Arts Board at Echo Valley Centre near Fort Qu'Appelle, offers one-to-four-week courses in band, orchestra, stage band, choral singing, piping and drumming, highland and national dancing, ballet, painting, pottery, acting, creative writing and weaving, with instruction by highly qualified teachers.

For five years from 1965, the annual month-long Saskatchewan Festival of the Arts focused attention on the arts in communities throughout the province by presenting

top-calibre artistic performances and exhibitions. This Festival concept has been replaced by similar programs planned by individual communities to meet their specific needs.

Each year, the Board has provided financial assistance to individual provincial artists to help them further their artistic training, or to establish themselves at a professional level. Individual assistance is based primarily on financial need, with scholarship and artistic ability as important factors. Emphasis is placed on assisting those in undergraduate studies or those striving to achieve professionalism. In 1972, the Board awarded a total of \$19,394 in individual assistance to 31 applicants.

The total budget of the Board in 1972 was \$360,500. Financial assistance extended to organizations included \$29,000 to Globe Theatre Productions Limited, \$3,400 to Hone-James Studio, \$1,950 to the Kinsmen International Band Festival, \$1,500 to the National Theatre School, \$1,500 to the National Youth Orchestra, \$4,693 to provincial arts councils, \$25,000 to the Regina Symphony, \$25,000 to the Saskatoon Symphony, \$1,000 to the Saskatchewan Junior Concert Society, \$16,500 to the Saskatchewan Music Festival Association, \$1,500 to the Saskatchewan Region Dominion Drama Festival, \$10,000 to Theatre Canada '72, \$1,000 to the Saskatchewan Society for Education Through Art, \$725 to the Saskatchewan Writers' Guild, \$9,895 to the Saskatchewan Youth Band, Orchestra and Chorus, \$1,000 to The Group (photographers), \$2,000 to the Norman Mackenzie Art Gallery in Regina and \$4,000 to the Mendel Art Gallery in Saskatoon. In all, major assistance totalling \$161,063 was awarded to 22 groups and organizations during 1972.

Alberta. The Cultural Development Branch of the Department of Culture, Youth and Recreation was set up after passage of an Act of the Legislature in 1946 providing for "encouragement of the cultural development of the people of this Province". The Act has since been amended several times to give it greater flexibility. The Branch is interested in the promotion of all forms of art and public libraries. Its program is intended to give opportunity to the public to witness the best in performing arts tours, exhibitions, etc., in order to gain their initial excitement and interest in the various modes and expressions in the arts; to conduct training courses at regular intervals for a variety of leaders, with special emphasis on in-service training for teachers in the public school system and instructors at special institutions operating programs that develop arts according to the needs of the individual, such as those for the mentally and physically handicapped, the aged, or inmates of penal institutions; to provide consultative services for cultural organizations throughout the province; and to give financial assistance to individuals, local amateur and professional institutions and provincial government organizations whose aims are the development of the arts. Awards to individuals wishing to further their training in some form of the arts amount to \$50,000 annually. The Alberta Art Foundation was formed by legislation in 1972, and has been allocated \$50,000 annually for the purchase of Alberta arts and crafts. The budget of the Branch for the year ended March 31, 1973 was nearly \$1.7 million.

British Columbia. The British Columbia Cultural Fund was set up by statute in 1967. That Act set aside \$5 million in an endowment-type fund, the interest from which was to be spent "for stimulation of the cultural development of the people of the Province". In September of that year, an advisory committee was established to receive applications for cultural grants and to report their recommendations to the Department of Finance for the issuance of the necessary funds. The amount of the endowment was raised to \$10 million in 1969, and raised again in 1972 to \$15 million.

Up to December 31, 1972, grants totalling \$3.6 million had been awarded by the Fund to support cultural activities throughout the province. The Fund also provides a small degree of financial support to the National Theatre School, the National Youth Orchestra and the Canadian Theatre Centre.

Grants totalling \$861,572 were made in the fiscal year 1971-72, compared with \$818,168 in the previous year, of which about 75% (\$641,121 in 1971-72 and \$611,694 in 1970-71) was given to major non-profit organizations such as symphony, drama and opera societies. About 19% of the grants in each year went to community arts councils and the remainder to scholarships, seminars and miscellaneous grants. For the fiscal year 1972-73, grants totalling \$826,081 had been made up to December 31, 1972, including for the first time an allocation for art acquisitions which amounted to \$34,650.

7.5 Public archives and library services

7.5.1 The Public Archives

The Public Archives was established in 1872 and now operates under the direction of the Dominion Archivist by authority of the Public Archives Act. It serves a dual role. As a research institution, it is responsible for acquiring from any source all significant documents relating to the development of the country and of value to Canada, and for providing suitable research services and facilities to make this material available to the public. As an essential part of the government administration, it has broad responsibilities in regard to the promotion of efficiency and economy in the management of its records.

The Historical Branch comprises four Divisions. The Manuscript Division contains manuscript collections and public records. The manuscript collections include private papers of statesmen and other distinguished citizens, records of cultural and commercial societies, and copies of records relating to Canada and now held in France, England and other countries; public records consist of selected records of all departments and agencies of the Government of Canada. The Picture Division has charge of documentary paintings, water colours, engravings and photographs relating to people, historical events, places and objects; it also has an extensive collection of films and sound recordings. The Map Division has custody of thousands of maps and plans pertaining to the discovery, exploration and settlement of this country and its topography, as well as a large collection of current topographical maps of foreign countries. The Library contains more than 80,000 volumes on Canadian history, including numerous pamphlets, periodicals and government publications.

Although documents in the Archives may not be taken out on loan, they may be consulted in the building, and a 24-hour-a-day service is provided for accredited research workers. Reproductions of available material may be obtained for a nominal fee on request and many of the documents in the Manuscript Division are on microfilm which may be obtained on interlibrary loan.

The Records Management Branch assists departments and agencies in the setting up and operation of their records management programs. Its service also includes recommendations and advice on scheduling and disposal of records. At the Ottawa, Toronto, Montreal and Vancouver records centres, it provides storage, reference service and planned disposal of dormant records on an economical basis. Other regional centres are being established in major cities across Canada.

The Administration and Technical Services Branch, in addition to an extensive conservation and restoration program, provides a technical and advisory service on microfilming to government departments and agencies. Microfilm work is done for departments at cost. It also provides a full range of services to the National Library.

Branch offices of the Public Archives are located in London, England and Paris, France. The Archives also administers Laurier House as a historical museum.

7.5.2 Library services

7.5.2.1 The National Library

The National Library was formally established on January 1, 1953 by Act of Parliament. On the same date it absorbed the Canadian Bibliographic Centre, which had been engaged in preliminary work and planning since 1950. The Library is now governed by the National Library Act, 1969 which broadened the powers of the National Librarian to whom is assigned the responsibility of co-ordinating government library services. The Act established a National Library Advisory Board consisting of 15 members.

The book collection now consists of more than 400,000 volumes, supplemented by microcopies of more than 100,000 additional titles. Newspaper files formerly in several locations have been brought together and now form the largest collection of Canadian newspapers in Canada.

The Library compiles and publishes *Canadiana*, a monthly catalogue of publications relating to Canada. It includes bibliographic descriptions of trade publications, official publications of the Government of Canada and the ten provinces, and films, filmstrips and phonograph records produced in Canada, in addition to works by Canadians and material on Canada published abroad. More than 24,000 titles were included in 1972. Retrospective bibliographies are planned or in progress, with *Canadiana, 1867-1900*, now being reviewed for publication.

The Canadian Union Catalogue lists over 10 million volumes in about 300 government, university, public and special libraries in all provinces. New accessions (which numbered over 1.5 million in 1971-72) are reported regularly, and the Union Catalogue thus forms a continuously up-to-date key to the main book resources of the country. During the year ended March 31, 1972, the Reference Division was asked to locate more than 110,000 titles, and it is noteworthy that copies of 78% of them were found in Canadian libraries.

The Library has published a union list of serials in the fields of the humanities and social sciences currently received by Canadian libraries. This list is a first step toward a complete union list of such serials in the humanities and social sciences that will complement the *Union list of scientific serials in Canadian libraries* published by the National Science Library.

A list of books about Canada, prepared by the National Library, appears in Appendix 5.

7.5.2.2 The National Science Library

The functions and services of the National Science Library are described in Chapter 9, Section 9.2.1.

7.5.2.3 Public libraries

Public libraries in Canada are organized under provincial legislation which specifies the method of establishment, the services to be provided and the means of support. Municipalities may organize and maintain public libraries or join together to form regional libraries according to provincial legislation. Provincial public library agencies advise local and regional libraries and distribute grants as provided.

Table 7.23 gives summary results of the annual public library survey for 1971, with comparable totals for 1970 and 1969. Book circulation was 97.3 million or 4.5 per capita. The current operating payments of all public libraries amounted to \$70.8 million or \$3.28 per capita compared with \$2.91 in the previous year. The full-time staff numbered 5,261 in 1971 of whom 1,252 or 23.8% were professional librarians.

7.5.2.4 Libraries in universities and colleges

Libraries in 108 universities (including four-year affiliated or associated institutions) reported, for the academic year 1970-71, a total of 24.1 million volumes or 78.4 per full-time student. Expenditures of university libraries amounted to \$79.7 million or \$259 per full-time student. The total full-time staff of the libraries numbered 6,776, of whom 1,537 or 22.7% were professional librarians. Details by province are given in Table 7.24.

Table 7.24 also shows that libraries in 143 colleges (post-secondary institutions such as community colleges, CEGEPs, colleges of applied arts and technology, teachers' colleges, etc.) reported a total book stock for 1970-71 of 4.3 million volumes or 30.5 per full-time student. Expenditures of these libraries amounted to \$10.5 million or \$73.89 per full-time student. Total library staff was 912 of whom 245, or 26.9%, were professional librarians.

Sources

- 7.1 Education Division, Institutional and Public Finance Statistics Branch, Statistics Canada.
- 7.2 Education Division, Institutional and Public Finance Statistics Branch, Statistics Canada; Industrial Training Division, Manpower Training Branch, Department of Manpower and Immigration; Territorial Affairs Branch, Department of Indian Affairs and Northern Development.
- 7.3 Education Division, Institutional and Public Finance Statistics Branch, Statistics Canada.
- 7.4.1 Education Division, Institutional and Public Finance Statistics Branch, Statistics Canada; *Facilities for the study of the arts in Canada*. Statistics Canada Cat. No. 81-223; The National Gallery of Canada.
- 7.4.2 Education Division, Institutional and Public Finance Statistics Branch, Statistics Canada; The National Museums of Canada.
- 7.4.3 The Canada Council.
- 7.4.4 Nova Scotia Department of Education; Quebec Department of Cultural Affairs; Ontario Ministry of Colleges and Universities; The Ontario Place Corporation; The Manitoba Arts Council; Saskatchewan Arts Board; Alberta Department of Culture, Youth and Recreation; British Columbia Cultural Fund Advisory Commissioner.
- 7.5.1 The Public Archives of Canada.
- 7.5.2 The National Library of Canada.

Tables

.. not available
... not appropriate or not applicable
— nil or zero
— too small to be expressed

e estimate
p preliminary
r revised
certain tables may not add due to rounding

7.1 Full-time enrolment in schools, colleges and universities, 1967-68 to 1971-72 (thousands)

Type of institution	1967-68	1968-69	1969-70	1970-71	1971-72
SCHOOLS AT THE ELEMENTARY-SECONDARY LEVEL (including pre-grade one)					
Elementary and secondary ¹	5,517.2	5,697.5	5,808.9	5,886.1	5,874.1
Kindergarten	5,471.0	5,646.7	5,754.8	5,829.8	5,819.5
Grades 1 to 8	285.9	326.8	355.1	348.0	333.2
Grades 9 and up	3,819.0	3,844.1	3,837.2	3,813.3	3,765.4
Private kindergarten and nurseries ²	1,366.1	1,475.8	1,562.5	1,668.5	1,720.9
Schools for the blind and deaf	42.4	46.9	50.0	52.2	50.5
	3.8	3.9	4.1	4.1	4.1
POST-SECONDARY INSTITUTIONS					
Non-university ³	352.8	395.3	436.9	475.6	496.8
General programs	99.4	129.5	142.7	166.1	173.8
University transfer programs ⁴	91.3	101.7	105.5	117.5	119.0
University institutions	8.1	27.9	37.2	48.6	54.8
University programs	253.4	265.8	294.2	309.5	323.0
Non-university programs	253.1	265.5	292.9	308.1	315.1
	0.3	0.3	1.3	1.3	7.9 ⁵
Total	5,870.0	6,092.8	6,245.8	6,361.7	6,370.9

¹ Public, private and federal.

² Includes estimates for Quebec and Saskatchewan.

³ Includes teachers' colleges, hospital and regional schools of nursing, CEGEPs, community colleges and related institutions.

⁴ Includes CEGEP academic enrolment.

⁵ Includes Ryerson Polytechnical Institute enrolment.

7.2 Schools, teachers and enrolment, by level, type of institution and province, 1970-71

Item	Province or territory					
	Nfld.	PEI	NS	NB	Que.	Ont.
ELEMENTARY-SECONDARY LEVEL (including pre-grade one)						
Elementary and secondary schools						
Public						
Schools	826	251	714	576	4,400	4,817
Teachers	6,437	1,606	9,999	7,897	77,978	93,000
Students	160,915	30,622	214,897	175,912	1,585,757	2,022,401
Federal						
Schools	—	1	4	7	31	72
Teachers	—	4	25	25	172	263
Students	—	71	524	615	4,350	6,671
Private						
Schools	4	1	10	9	510	265
Teachers	59	1	109	48	3,622	2,248
Students	722	29	1,649	463	61,326	44,116
Schools for the blind and deaf						
Schools	1	1	2	—	8	4
Teachers	22	2	85	—	240	267
Students	144	12	450	—	1,281	1,427
Private kindergarten and nursery schools						
Schools	1	9	11	23	..	418
Teachers	6	26	32	32	..	1,544
Students	70	368	327	598	..	16,075
Total, elementary-secondary						
Schools	832	263	741	615	4,949	5,576
Teachers	6,524	1,639	10,250	8,002	82,012	97,322
Students	161,851	31,102	217,847	177,588	1,652,714	2,090,690
POST-SECONDARY LEVEL						
Non-university institutions						
Community colleges and related institutions						
Institutions	2	1	4	2	66	32
Teachers	56	14	84	55	4,500	2,900
Students	705	175	1,031	681	70,385	37,483
Teachers' colleges						
Institutions	—	—	1	2	12	10
Teachers	—	—	62	78	120	296
Students	—	—	872	1,003	2,074	6,652
Hospital and regional schools of nursing						
Institutions	4	4	9	12	17	65
Teachers	56	27	102	108	180	1,055
Students	715	175	952	1,014	1,917	10,264
Universities and colleges						
Institutions ¹	1	1	10	4	18	35
Teachers	500	123	1,184	785	5,700	9,335
Students	6,378	1,755	15,626	10,580	62,113	121,115
Total, post-secondary						
Institutions	7	6	24	20	113	142
Teachers	612	164	1,432	1,026	10,500	13,586
Students	7,798	2,105	18,481	13,278	136,489	175,514

7.2 Schools, teachers and enrolment, by level, type of institution and province, 1970-71 (concluded)

Item	Province or territory					
	Nfld.	PEI	NS	NB	Que.	Ont.
Total, elementary-secondary and post-secondary						
Schools and institutions	839	269	765	635	5,062	5,718
Teachers	7,136	1,803	11,682	9,028	92,512	110,908
Students	169,649	33,207	236,328	190,866	1,789,203	2,266,204
TRADE LEVEL						
Schools	21	8	45	19	21	115
Teachers	315	280	725	301	500	1,910
Students ²	9,540	3,828	17,784	9,610	17,100	89,897
Total, all levels						
Schools and institutions ³	7,451	2,083	12,407	9,329	93,012	112,818
Teachers	179,189	37,035	254,112	200,476	1,806,303	2,356,101
Students						
	Man.	Sask.	Alta.	BC	YT and NWT	Canada ⁴
ELEMENTARY-SECONDARY LEVEL (including pre-grade one)	-					
Elementary and secondary schools						
Public						
Schools	710	989	1,265	1,494	80	16,122
Teachers	11,534	10,977	20,358	21,575	741	262,102
Students	246,946	247,332	423,922	526,991	14,640	5,650,335
Federal						
Schools	35	51	24	46	—	285
Teachers	241	170	165	149	—	1,569
Students	5,914	3,354	3,564	3,360	—	34,290
Private						
Schools	52	15	34	125	—	1,025
Teachers	415	84	284	1,051	—	7,921
Students	8,284	1,552	5,688	21,319	—	145,148
Schools for the blind and deaf						
Schools	2	1	1	1	—	21
Teachers	25	26	24	43	—	734
Students	168	164	135	285	—	4,066
Private kindergarten and nursery schools						
Schools	40	..	220	305	—	1,389 ⁵
Teachers	81	..	363	607	—	3,591 ⁵
Students	1,135	..	9,172	11,059	—	52,154 ⁵
Total, elementary-secondary						
Schools	839	1,056	1,544	1,971	80	18,842
Teachers	12,296	11,257	21,194	23,425	741	275,917
Students	262,447	252,402	442,481	563,014	14,640	5,885,993
POST-SECONDARY LEVEL						
Non-university institutions						
Community colleges and related institutions						
Institutions	3	3	12	13	—	138
Teachers	170	150	700	830	—	9,459
Students	2,154	1,768	9,668	11,602	—	135,652
Teachers' colleges						
Institutions	—	—	—	—	—	25
Teachers	—	—	—	—	—	556
Students	—	—	—	—	—	10,601
Hospital and regional schools of nursing						
Institutions	6	2	12	6	—	137
Teachers	117	39	204	123	—	2,011
Students	1,223	383	1,775	1,408	—	19,826
Universities and colleges						
Institutions ¹	6	11	6	9	—	101
Teachers	1,355	1,255	2,115	2,381	—	24,733
Students	16,941	14,814	29,524	30,623	—	309,469
Total, post-secondary						
Institutions	15	16	30	28	—	401
Teachers	1,642	1,444	3,019	3,334	—	36,759
Students	20,318	16,965	40,967	43,633	—	475,548
Total, elementary-secondary and post-secondary						
Schools and institutions	854	1,072	1,574	1,999	80	19,243
Teachers	13,938	12,701	24,213	26,759	741	312,676
Students	282,765	269,367	483,448	606,647	14,640	6,361,541
TRADE LEVEL						
Schools	22	23	42	82	—	398
Teachers	297	242	376	445	—	5,391
Students ²	10,025	10,584	21,438	29,395	—	219,201
Total, all levels						
Schools and institutions ³	14,235	12,943	24,589	27,204	80	318,067
Teachers	292,790	279,951	504,886	636,042	741	318,067
Students					14,640	6,580,742

¹ Number of reporting institutions for enrolment.² Total registrations during the school year.³ Figures cannot be added, except in the territories, because some institutions are counted twice, once under trade schools and once under community colleges.⁴ Includes DND schools outside of Canada.⁵ Includes estimates for Quebec and Saskatchewan.

7.3 Enrolment in elementary and secondary schools (public, private and federal), by grade and by province, 1970-71

Grade	Province or territory						
	Nfld.	PEI	NS	NB	Que.	Ont.	Man.
Kindergarten	12,368	12	17,256	174	113,881	157,753	16,927
Grade 1	14,960	3,058	17,560	15,758	131,574	170,395	22,415
Grade 2	14,570	2,891	18,295	15,807	127,163	165,408	22,028
Grade 3	14,756	2,902	18,541	16,059	121,416	163,489	21,312
Grade 4	14,873	2,647	18,137	16,122	128,794	160,933	21,420
Grade 5	14,678	2,712	18,097	15,791	133,083	161,364	21,175
Grade 6	14,472	2,604	17,731	16,107	133,269	157,659	20,766
Grade 7	14,210	2,709	18,387	16,711	93,883	156,405	19,994
Grade 8	13,370	2,575	17,963	15,464	145,558	148,500	19,522
Grade 9	12,244	2,597	16,143	14,499	148,106	165,646	18,871
Grade 10	9,956	2,090	14,550	13,199	131,513	150,866	18,303
Grade 11	9,195	1,697	12,116	10,689	114,414	123,819	16,665
Grade 12	106	1,449	8,907	8,895	85,373	105,764	14,760
Grade 13	—	—	—	57	—	52,951	—
Elementary ungraded	1,642	558	2,345	1,417	26,048	31,262	3,193
Secondary ungraded	237	221	1,042	241	17,358	974	3,793
Total	161,637	30,722	217,070	176,990	1,651,433	2,073,188	261,144
	Sask.	Alta.	BC	YT	NWT	DND schools overseas	Canada
Kindergarten	4,486	967	22,682	115	826	530	347,977
Grade 1	23,067	40,083	45,887	537	1,540	618	487,452
Grade 2	22,144	39,140	46,365	490	1,289	632	476,222
Grade 3	21,386	38,507	46,278	494	1,101	614	466,855
Grade 4	21,634	38,255	46,089	451	1,069	515	470,939
Grade 5	21,417	37,973	46,804	430	909	471	474,904
Grade 6	20,985	37,351	46,049	414	804	474	468,685
Grade 7	21,118	36,744	44,752	371	581	494	426,359
Grade 8	20,573	35,115	43,832	379	485	429	463,765
Grade 9	19,874	33,237	42,250	347	368	371	474,553
Grade 10	19,098	32,847	39,497	241	298	294	432,752
Grade 11	17,399	29,112	36,405	211	243	202	372,167
Grade 12	15,665	29,747	31,962	119	185	128	303,060
Grade 13	—	—	260	—	—	95	53,363
Elementary ungraded	2,215	2,050	7,108	22	224	—	78,084
Secondary ungraded	1,177	2,046	5,450	13	84	—	32,636
Total	252,238	433,174	551,670	4,634	10,006	5,867	5,829,773

7.4 Enrolment in elementary and secondary schools (public, private and federal), by age and by province, 1970-71

Age	Province or territory						
	Nfld.	PEI	NS	NB	Que.	Ont.	Man.
4 years and under	303	—	—	—	—	46,528	—
5 years	11,357	599	16,255	3,507	147,300	144,396	20,772
6 "	13,763	2,547	16,954	14,360	126,800	157,529	19,973
7 "	13,530	2,637	17,319	14,599	130,300	161,202	20,854
8 "	13,285	2,596	17,503	14,842	129,200	161,255	20,901
9 "	13,154	2,629	17,643	14,818	134,500	163,351	20,884
10 "	13,550	2,676	17,378	14,596	135,200	161,922	21,221
11 "	13,416	2,638	17,056	14,749	135,400	159,052	20,408
12 "	12,918	2,435	16,760	14,798	133,700	156,049	19,536
13 "	13,048	2,597	17,286	15,039	132,100	153,962	20,226
14 "	12,778	2,420	16,148	14,465	128,400	149,457	19,207
15 "	11,774	2,284	15,592	13,859	118,400	144,743	19,196
16 "	10,278	2,031	13,965	12,172	101,900	130,677	17,629
17 "	5,406	1,471	10,216	9,036	63,500	103,668	13,394
18 "	2,456	736	4,585	3,976	26,900	57,504	4,894
19 "	465	282	1,631	1,532	6,500	16,509	1,425
20 "	124	144	475	642	1,333	3,936	624
21 years and over	32	—	304	—	—	1,448	—
Total	161,637	30,722	217,070	176,990	1,651,433	2,073,188	261,144
	Sask.	Alta.	BC	YT	NWT	DND schools overseas	Canada
4 years and under	—	485	—	—	—	—	47,316
5 years	8,931	12,918	12,594	202	567	664	380,062
6 "	20,285	36,454	32,577	469	1,114	613	443,438
7 "	21,078	37,620	44,031	435	1,011	605	465,221
8 "	20,734	37,681	45,542	407	956	574	465,476
9 "	20,903	37,501	45,529	462	996	509	472,879
10 "	21,198	37,970	45,912	443	941	456	473,463
11 "	21,270	36,976	46,481	414	814	493	469,167
12 "	20,215	35,684	45,574	386	773	474	459,302
13 "	20,481	34,541	45,333	342	748	371	456,074
14 "	20,277	34,005	43,586	320	617	379	442,059
15 "	19,859	32,437	42,104	321	538	275	421,382
16 "	18,213	29,158	38,973	211	408	182	375,797
17 "	13,257	20,262	34,708	165	275	128	275,486
18 "	3,908	6,478	20,324	40	131	64	131,996
19 "	1,104	1,782	5,998	13	117	22	37,380
20 "	525	1,222	1,499	2	—	9	10,535
21 years and over	—	—	905	2	—	49	2,740
Total	252,238	433,174	551,670	4,634	10,006	5,867	5,829,773

7.5 Private school enrolment, by province, 1967-68 to 1971-72

Year	Nfld.	PEI	NS	NB	Que.	Ont.	Man.	Sask.	Alta.	BC	Canada
1967-68	230	140	3,255	468	68,909 ¹	42,986	9,708	1,987	5,614	24,160	157,457
1968-69	364	136	2,748	381	61,263 ¹	41,604	8,958	1,917	5,231	23,172	145,774
1969-70	553	70	2,125	353	62,500 ^e	43,007	8,178	1,854	5,342	22,359	146,341
1970-71	722	29	1,649	463	61,326 ^p	44,116	8,284	1,552	5,688	21,319	145,148
1971-72	746	—	1,405	398	64,766 ^p	43,949	7,438	1,710	5,439	21,777	147,628

¹ Revised data from Quebec Department of Education.

7.6 Full-time enrolment at the post-secondary non-university level, by type of institution and by province, 1970-71 and 1971-72

Province	Teachers' colleges		Hospital and regional schools of nursing		Community colleges and related institutions		Universities		Total	
	1970-71	1971-72	1970-71	1971-72	1970-71	1971-72	1970-71	1971-72	1970-71	1971-72
Newfoundland	—	—	715	700	705	848	—	—	1,420	1,548
Prince Edward Island	—	—	175	193	175	391	—	—	350	584
Nova Scotia	872	797	952	998	837	934	80	67	2,741	2,796
New Brunswick	1,003	707	1,014	1,007	681	792	—	—	2,698	2,506
Quebec	2,074	736	1,917	785	29,727	36,147	196	55 ^e	33,914	37,723
Ontario	6,652	3,057	10,264	9,307	37,483	37,981	618	7,482	55,017	57,827
Manitoba	—	—	1,223	1,153	2,154	2,655	167	193	3,544	4,001
Saskatchewan	—	—	383	335	1,722	2,026	273	84	2,378	2,445
Alberta	—	—	1,775	1,785	7,359	8,577	—	—	9,134	10,362
British Columbia	—	—	1,408	1,331	6,208	5,707	—	—	7,616	7,038
Canada	10,601	5,297	19,826	17,594	87,051	96,058	1,334	7,881	118,812	126,830

7.7 Total and female full-time enrolment at the post-secondary non-university level¹, by field of specialization, 1966-67 to 1970-71

Field of specialization and sex		1966-67	1967-68	1968-69	1969-70	1970-71
Applied arts	T	3,201	5,414	6,351	9,859	9,590
	F	1,438	2,770	3,239	5,055	4,462
Business and commercial	T	5,197	9,302	14,762	19,722	27,004
	F	1,002	2,120	3,691	5,207	8,258
Nursing (RN diploma)	T	23,931	24,323	25,100	25,795	26,545
	F	23,670	24,036	24,785	25,432	26,110
Teacher training	T	23,129	23,517	23,625	15,046	10,848
	F	14,929	15,576	15,849	11,190	7,921
Technologies						
Aeronautical	T	307	323	428	628	737
	F	—	—	5	9	10
Architectural	T	681	1,028	1,240	884	1,187
	F	21	19	18	17	56
Automotive and diesel	T	870	897	588	465	94
	F	—	—	—	—	—
Chemical	T	1,941	1,549	1,981	2,556	2,846
	F	189	138	297	671	954
Civil	T	2,167	2,366	3,165	3,405	3,206
	F	8	26	44	63	44
Electrical and electronics	T	6,561	6,256	7,314	7,874	7,852
	F	21	19	43	65	80
Food	T	239	252	368	582	123
	F	206	170	224	355	49
Marine	T	151	229	127	263	95
	F	—	—	—	2	—
Mechanical	T	3,902	3,746	3,640	3,602	4,780
	F	13	29	15	27	50
Medical and dental	T	1,869	1,757	3,256	3,932	3,608
	F	1,335	1,518	2,605	2,765	3,089
Natural resources	T	1,280	2,315	2,695	3,973	4,808
	F	34	42	81	307	108
Social welfare and recreation	T	862	984	2,318	3,526	5,289
	F	546	382	1,390	2,039	3,452
Miscellaneous	T	1,580	7,431	5,043	4,695	10,200
	F	11	2,667	755	914	4,010
Total	T	77,868	91,689	102,001	106,807	118,812
	F	43,423	49,512	53,041	54,118	58,653

¹ Excludes CEGEP academic enrolment.

7.8 Enrolment in university-transfer programs of community colleges and related institutions, by province, 1967-68 to 1971-72

Province	1967-68	1968-69	1969-70	1970-71	1971-72
Nova Scotia	98	158	193	194	164
Quebec ¹	4,228	23,277	31,359	40,658	46,542
Saskatchewan	32	51	54	46	67
Alberta	992	1,709	1,927	2,309	2,268
British Columbia	2,715	2,675	3,679	5,394	5,785
Canada	8,065	27,870	37,212	48,601	54,826

¹ CEGEP academic enrolment.

7.9 Full-time enrolment in universities and colleges¹, by province, 1967-68 to 1971-72

Province	1967-68	1968-69	1969-70	1970-71	1971-72
Newfoundland	4,473	4,782	5,157	6,378	7,077
Prince Edward Island	1,369	1,555	1,566	1,755	1,771
Nova Scotia	10,403	11,747	13,956	15,626	16,291
New Brunswick	7,927	8,961	9,608	10,580	10,952
Quebec	78,382	64,401	66,830	62,113	62,819
Ontario	79,433	92,932	108,825	121,115	134,422
Manitoba	13,426	15,099	16,597	16,941	17,351
Saskatchewan	12,665	13,833	14,919	14,814	14,801
Alberta	18,696	23,213	26,624	29,524	28,769
British Columbia	26,712	29,320	30,064	30,623	28,776
Canada	253,486	265,843	294,146	309,469	323,029

¹ Excludes community colleges.

7.10 Degrees granted^P by Canadian universities and colleges, by type and by sex, 1966-67 to 1970-71

Year	Bachelors and first professional degrees			Masters			Earned doctorates		
	M	F	T	M	F	T	M	F	T
1966-67	28,178	14,538	42,716	4,202	1,054	5,256	717	63	780
1967-68	31,849	17,207	49,056	4,594	1,148	5,742	908	98	1,006
1968-69	34,305	20,013	54,318	5,487	1,557	7,044	1,021	87	1,108
1969-70	37,273	23,180	60,453	6,640	1,821	8,461	1,247	128	1,375
1970-71	41,596	25,604	67,200	7,516	2,122	9,638	1,474	151	1,625

7.11 Bachelor and first professional degrees awarded by Canadian universities and colleges, by field of study and by sex, 1970-71

Field of study	Male	Female	Total
Agriculture	532	41	573
Architecture	252	14	266
Arts	15,545	12,040	27,585
Commerce and business administration (incl. secretarial studies)	3,111	334	3,445
Dentistry	353	16	369
Education (incl. physical and health education and recreation)	7,203	8,006	15,209
Engineering and applied sciences	3,867	31	3,898
Environmental studies	114	14	128
Fine and applied arts (incl. music, interior and industrial design)	246	375	621
Forestry	222	3	225
Household science (incl. dietetics and nutrition)	4	557	561
Journalism	29	43	72
Landscape architecture	20	1	21
Law	1,766	183	1,949
Library science	114	192	306
Medicine	1,179	185	1,364
Nursing	37	1,221	1,258
Optometry	30	—	30
Pharmacy	272	169	441
Rehabilitation medicine (incl. occupational therapy and physiotherapy)	16	189	205
Religious studies (incl. theology and religious education)	604	139	743
Science	5,820	1,674	7,494
Social work	119	138	257
Veterinary medicine	121	11	132
Other	20	28	48
Total	41,596	25,604	67,200

7.12 Graduate-level degrees and diplomas awarded by Canadian universities, by field of study and by sex, 1970-71^P

Field of study	Diplomas			Masters			Doctorates			Total		
	M	F	T	M	F	T	M	F	T	M	F	T
Fine and applied arts	3	4	7	42	44	86	5	1	6	50	49	99
Humanities and related	—	—	—	1,276	722	1,998	141	41	182	1,417	763	2,180
Social sciences and related	237	32	269	2,534	646	3,180	193	36	229	2,964	714	3,678
Education	227	97	324	1,026	395	1,421	72	5	77	1,325	497	1,822
Agriculture and biological sciences	14	3	17	440	112	552	253	23	276	707	138	845
Engineering and applied sciences	36	—	36	1,163	12	1,175	225	—	225	1,424	12	1,436
Health professions	151	48	199	180	97	277	91	11	102	422	156	578
Mathematical and physical sciences	4	—	4	855	94	949	494	34	528	1,353	128	1,481
Total	672	184	856	7,516	2,122	9,638	1,474	151	1,625	9,662	2,457	12,119

7.13 Registrations in school board continuing education courses, 1970-71

Program	Province or territory						
	Nfld.	PEI	NS	NB	Que.	Ont.	
Academic	6,518	3,584	7,071	4,495	163,280	41,244	
Vocational	236	197	5,643	3,447	39,926	61,780	
Hobby skills	732	1,186	9,348	5,057	67,511	63,156	
Cultural enrichment	88	402	989	907	—	16,148	
Social education	58	521	437	169	10,682	19,429	
Recreational	85	401	773	—	—	6,457	
Other	—	166	45	11	6,285	1,319	
Total	7,717	6,457	24,306	14,086	287,684	209,533	
	Man.	Sask.	Alta.	BC	YT ¹	NWT ¹	Canada
Academic	2,774	4,123	4,716	22,930	26	142	260,903
Vocational	2,203	3,167	7,602	39,063	13	218	163,495
Hobby skills	6,304	5,151	10,406	53,278	198	147	222,474
Cultural enrichment	859	263	2,290	14,131	23	81	36,181
Social education	1,454	761	3,698	19,990	—	51	57,250
Recreational	1,438	440	4,894	23,490	46	40	38,064
Other	33	34	1,489	7,400	—	154	16,936
Total	15,065	13,939	35,095	180,282	306	833	795,303 ²

¹ Courses co-ordinated by provincial departments of education.

² Estimated to represent 467,079 individual (unduplicated) participants.

7.14 Adult registrations in department of education correspondence courses, 1970-71

Program	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Canada
Academic	38	878	862	1,035	63,692	1,622	2,941	8,788	4,634	84,490
Vocational	—	—	16	6,913	11,604	198	206	2,368	6,242	27,547
Other	—	149	—	—	—	—	—	2,435	2,753	5,337
Total	38	1,027	878	7,948	75,296	1,820	3,147	13,591	13,629	117,374 ¹

¹ Estimated to represent 81,419 individual (unduplicated) participants.

7.15 Registrations in university non-credit courses and related activities, 1970-71

Courses	Province						
	Nfld.	PEI	NS	NB	Que.	Ont.	
PROFESSIONAL DEVELOPMENT COURSES	32	70	2,089	980	8,348	37,039	
Agriculture and related	—	—	—	—	543	8,415	
Business and management	—	—	734	91	1,675	8,868	
Education	32	—	55	500	157	5,852	
Engineering	—	—	101	228	968	979	
Fine and applied arts	—	—	22	—	13	438	
Health sciences	—	—	632	—	2,914	9,743	
Humanities and related	—	—	—	—	161	50	
Pure and applied sciences	—	70	545	161	1,614	1,735	
Social sciences and related	—	—	—	—	303	959	
GENERAL INTEREST COURSES	473	62	1,293	1,650	10,820	27,898	
Fine arts appreciation and instruction	358	—	351	1,132	1,608	1,633	
Modern languages and literature	—	11	201	44	2,521	1,726	

7.15 Registrations in university non-credit courses and related activities, 1970-71 (concluded)

Courses	Province					
	Nfld.	PEI	NS	NB	Que.	Ont.
GENERAL INTEREST COURSES (concluded)						
Second language	66	—	49	51	4,792	1,524
Communication arts	—	—	115	67	508	2,040
Human relations and leadership	—	36	352	151	276	1,492
Public affairs	—	15	106	80	90	5,942
Other	49	—	119	125	1,025	13,541
ASSOCIATION CERTIFICATE COURSES	—	190	369	133	10,124	13,023
Accounting	—	—	—	55	4,434	6,090
Banking	—	—	137	78	429	1,598
Education	—	190	—	—	893	954
Management	—	—	232	—	745	2,575
Public administration	—	—	—	—	13	860
Insurance and real estate	—	—	—	—	151	546
Other	—	—	—	—	3,459	400
Total registrations	505	322	3,751	2,763	29,292	77,960
	Man.	Sask.	Alta.	BC	Canada	
PROFESSIONAL DEVELOPMENT COURSES	3,853	3,356	20,178	10,446	86,391	
Agriculture and related	1,810	2,497	1,154	897	15,316	
Business and management	1,235	188	5,580	106	18,477	
Education	109	216	2,208	1,580	10,709	
Engineering	33	124	1,405	949	4,787	
Fine and applied arts	—	—	53	25	551	
Health sciences	182	132	834	4,717	19,154	
Humanities and related	12	—	4,067	—	4,290	
Pure and applied sciences	111	90	3,387	365	8,078	
Social sciences and related	361	109	1,490	1,807	5,029	
GENERAL INTEREST COURSES	2,127	11,462	14,545	11,890	82,220	
Fine arts appreciation and instruction	471	1,896	4,772	1,472	13,693	
Modern languages and literature	44	686	937	1,391	7,561	
Second language	121	187	192	129	7,111	
Communication arts	190	93	532	781	4,326	
Human relations and leadership	156	159	1,531	620	4,773	
Public affairs	569	735	1,791	2,303	11,631	
Other	576	7,706	4,790	5,194	33,125	
ASSOCIATION CERTIFICATE COURSES	1,697	1,264	4,649	5,118	36,567	
Accounting	259	617	2,768	2,974	17,197	
Banking	176	129	76	739	3,362	
Education	—	—	—	266	2,303	
Management	836	275	955	598	6,216	
Public administration	42	243	166	—	1,324	
Insurance and real estate	384	—	503	12	1,596	
Other	—	—	181	529	4,569	
Total registrations	7,677	16,082	39,372	27,454	205,178 ¹	

¹ Estimated to represent 136,785 individual (unduplicated) participants.7.16 Part-time university and college¹ enrolment, by province, 1970-71

Province	Undergraduate degrees, diplomas and certificates, auditors, special students, etc.	Graduate degrees, diplomas and certificates, qualifying year	Non-university level diplomas or certificates	Total
Newfoundland	2,747	115	—	2,862
Prince Edward Island	1,068	—	—	1,068
Nova Scotia	2,476	400	—	2,876
New Brunswick	4,572	163	—	4,735
Quebec	59,931	4,223	1,685	65,839
Ontario	50,312	6,812	1	57,125
Manitoba	7,003	520	—	7,523
Saskatchewan	3,067	424	465	3,956
Alberta	5,924	1,261	—	7,185
British Columbia	3,223	452	—	3,675
Canada	140,323	14,370	2,151	156,844

¹ Excludes transfer colleges.

7.17 Summary statistics of teachers and principals in public elementary and secondary schools, by sex and by province, 1970-71

Province	Teachers and principals		Median salaries ¹		Median experience		University graduates	
	M	F	M \$	F \$	M yr	F yr	M %	F %
Teaching elementary grades ²								
Newfoundland	1,384	3,448	6,181	4,400	5-6	5-5	37.2	15.0
Prince Edward Island	146	953	6,522	4,526	6-6	10-2	41.1	9.5
Nova Scotia	1,126	5,467	7,560	5,794	5-6	10-4	57.4	23.0
New Brunswick	917	4,298	6,575	4,899	5-1	9-2	54.4	16.7
Quebec	5,158	35,134	..	..	..	..	..	..
Ontario	..	..	..	..	..	..	..	..
Manitoba	2,021	8,688	8,127	6,260	6-7	5-2	45.9	17.5
Saskatchewan	1,965	5,431	8,092	6,805	7-4	8-5	50.9	12.5
Alberta	3,530	9,370	9,729	7,522	7-5	8-6	75.1	34.4
British Columbia	3,471	8,802	9,563	7,987	8-4	6-5	63.1	28.6
Teaching secondary grades ²								
Newfoundland	1,170	435	7,280	6,397	5-2	5-8	65.0	57.2
Prince Edward Island	291	216	7,386	6,640	4-8	8-0	75.9	46.3
Nova Scotia	1,935	1,471	8,270	7,511	5-7	7-2	76.3	62.2
New Brunswick	1,593	1,089	7,395	6,351	6-0	6-8	72.5	55.1
Quebec	22,350	15,336	..	..	..	..	..	..
Ontario	..	..	..	..	..	..	..	..
Manitoba	2,407	1,418	10,090	8,225	6-3	4-6	80.6	63.6
Saskatchewan	2,522	1,059	10,283	7,950	8-8	8-3	80.9	58.1
Alberta	4,804	2,634	10,398	8,787	7-0	6-6	85.0	72.2
British Columbia	6,339	2,963	10,657	9,182	8-7	7-0	83.4	76.9

¹ Salary data exclude figures for Roman Catholic schools.

² A teacher who teaches both elementary and secondary grades is classified by level according to type of school. If he teaches in a junior high school or a junior-senior high school, or if he teaches in more than one school, he is classified as a "secondary" teacher; otherwise, he is classified as an "elementary" teacher.

7.18 Median salaries¹ of full-time teachers in universities and colleges, by rank, 1966-67 to 1970-71 (dollars)

Year	All ranks	Deans	Professors	Associate professors	Assistant professors	Lecturers and instructors
1966-67	10,550	19,000	15,700	12,000	9,500	7,450
1967-68	11,403	20,714	17,081	12,998	10,228	7,990
1968-69	12,224	22,555	18,516	14,058	11,030	8,649
1969-70	13,265	24,067	19,870	15,012	11,837	9,441
1970-71	14,248	25,950	21,504	16,057	12,701	10,002

¹ Based on data provided by reporting institutions accounting for 80% to 99% of the enrolment.

7.19 Expenditures on education and percentage distribution, by source of funds, 1966-70

Year	Total \$ million	Government			Fees %	Other sources %
		Federal ¹ %	Provincial %	Municipal %		
1966	4,155.2	13.0	47.8	27.8	5.3	6.1
1967	5,025.5	12.5	51.6	26.1	4.5	5.3
1968	5,777.1	11.3	54.4	25.6	4.4	4.3
1969	6,554.8	11.2	54.5	25.6	4.1	4.6
1970	7,408.9	10.8	57.0	23.8	4.1	4.3

¹ Starting with 1967, funds transferred to the provinces for the purpose of post-secondary education are classified as provincial expenditures.

7.20 Expenditures on education, by level of study, 1966-70 (million dollars)

Year	Total	Elementary and secondary	Post-secondary		Total	Vocational training
			Non-university	University ¹		
1966	4,155.2	2,790.9	125.0	991.6	1,116.6	247.7
1967	5,025.4	3,230.0	200.1	1,243.4	1,443.5	351.9
1968	5,777.1	3,775.1	251.2	1,360.0	1,611.2	390.8
1969	6,554.8	4,262.8	272.2	1,583.0	1,855.2	436.8
1970	7,408.8	4,805.8	373.5	1,767.6	2,141.1	461.9

¹ Expenditures for university transfer students are included under "university" for all years up to and including 1969-70.

7.21 Facilities for the study of the arts in Canada, academic year 1969-70

Course	University			Community college and CEGEP		Independent	
	Under-graduate	Masters	Doc-torate	Transfer diploma	Voca-tional diploma	Diploma	Non-diploma
Advertising and commercial art	—	—	—	—	7	—	1
Fine art	20	3	3	16	9	3	3
Crafts ¹	—	—	—	—	8	3	2
Creative writing	2	1	—	—	—	1	—
Dance	1	—	—	—	—	1	—
Design ²	6	—	—	—	15	1	1
Graphic arts	—	—	—	—	13	1	1
Music	32	9	6	10	4	—	3
Photography and film	3	—	—	6	5	1	—
Theatre	14	5	1	2	5	2	1

¹ Includes pottery, ceramics, batik, jewellery and metal arts.

² Includes furniture, interior and fashion design.

7.22 Number of museums, art galleries and related institutions in Canada, 1970

Type of institution	Nfld.	PEI	NS	NB	Que.	Ont.	Man.	Sask.	Alta.	BC	YT and NWT	Canada
General museum ¹	—	2	9	6	11	53	7	11	20	29	2	150
Art museum or gallery	1	—	3	4	13	22	3	6	8	7	—	67
History museum	2	2	16	5	12	52	7	9	14	17	—	136
Natural science museum	—	—	—	—	3	6	4	5	3	3	—	24
Science and technology museum	—	—	—	—	1	3	—	1	—	1	—	6
Archives	1	1	6	3	8	19	1	2	3	5	—	49
Zoo or wildlife refuge	—	—	—	—	4	8	1	3	1	2	—	19
Aquarium	—	—	—	—	2	—	—	—	—	1	—	3
Botanical garden, arboretum or conservatory	—	—	—	—	3	4	—	—	1	3	—	11
Planetarium	—	—	—	—	—	1	1	—	2	1	—	5
Observatory	—	—	—	—	1	3	—	1	—	2	—	7
Historic building or restoration	3	4	11	6	6	36	4	7	3	5	2	87
Other ²	6	4	6	2	23	50	8	12	11	22	—	144
Total	13	13	51	26	87	257	36	57	66	98	4	708

¹ A museum is classified as "General" if the response indicated more than one category of collection, e.g., archaeology, entomology, ethnology.

² Institutions which did not completely fit into the specified types are classified as "Other". This classification also includes pioneer villages, and some complexes where one questionnaire was used to respond for two or more components of a complex, e.g., planetarium, art museum.

7.23 Summary statistics for all public libraries, 1971, with totals for 1969 and 1970

Province or territory	Population	Lib-rary	Stock	Circulation	Current operating payments \$'000	Full-time staff
Newfoundland	522,104	1	500,408	1,482,539	930	76
Prince Edward Island	111,641	1	137,000	290,000	139	18
Nova Scotia	788,960	11	765,272	2,878,084	1,868	170
New Brunswick	634,557	4	394,916	2,077,170	815	97
Quebec	6,027,764	112	4,185,876	10,518,550	7,170	516
Ontario	7,703,106	341	13,446,103	49,323,554	41,522	2,958
Manitoba	988,247	26	1,017,976	4,046,925	1,985	155
Saskatchewan	926,242	11	1,139,100	4,212,606	3,009	264
Alberta	1,627,874	138	2,371,096	7,791,567	4,938	423
British Columbia	2,184,621	68	3,194,393	14,499,854	7,948	565
Yukon Territory	18,388	1	64,585	119,664	259	10
Northwest Territories	34,807	1	41,824	96,194	173	9
Canada 1971	21,568,311	715	27,258,549	97,336,707	70,756	5,261
1970	21,377,000	732	26,159,632	96,324,476	62,162	4,867
1969	21,061,000	723	24,374,244	92,910,068	51,867	4,573

7.24 Libraries in universities and colleges, academic year 1970-71

Province	Institutions reporting	Full-time enrolment	Volumes of books, periodicals and pamphlets	Full-time staff	Total operating expenditures \$
UNIVERSITIES¹	108	307,459	24,093,460	6,776	79,686,319
Newfoundland	1	6,378	310,995	74	1,471,967
Prince Edward Island	1	1,755	129,763	30	505,004
Nova Scotia	10	15,626	1,186,274	281	3,475,686
New Brunswick	6	9,686	710,356	193	2,207,462
Quebec	17	60,862	5,081,128	1,446	14,323,086
Ontario	40	120,805	10,356,574	2,915	34,827,051
Manitoba	7	16,926	1,296,696	256	3,317,210
Saskatchewan	10	14,787	953,718	219	2,868,081
Alberta	7	30,010	1,721,561	624	7,616,259
British Columbia	9	30,624	2,346,395	738	9,074,513
COLLEGES²	143	141,892	4,324,147	912	10,485,005
Newfoundland	2	705	30,415	6	74,463
Prince Edward Island	1	175	3,540	1	24,446
Nova Scotia	5	2,131	100,556	22	238,219
New Brunswick	4	1,619	37,595	7	83,483
Quebec	59	70,481	2,813,980	477	4,644,905
Ontario	43	44,102	774,953	232	2,973,431
Manitoba	3	2,084	36,681	21	195,740
Saskatchewan	2	1,135	33,742	5	82,144
Alberta	11	9,085	236,603	66	785,062
British Columbia	13	10,375	256,082	75	1,383,112

¹ Universities are defined as degree-granting institutions including affiliated, associated and federated colleges if these offer four-year academic programs leading to degrees which are granted by the parent university.

² Colleges are defined as post-secondary, non-degree-granting institutions offering technical and university transfer programs of one to four years duration. In addition, these may offer other levels of courses of less than one year in vocational and extension programs.

Sources

7.1 - 7.24 Education Division, Institutional and Public Finance Statistics Branch, Statistics Canada.

Chapter 8

Labour

8.1 The government in relation to labour

8.1.1 Canada Department of Labour

Established in 1900 under the Conciliation Act, which involved the federal government in preventing and settling labour disputes, the Canada Department of Labour was formed to investigate important industrial questions and to collect, analyze and publish statistical and other information related to Canadian labour conditions. It also administered the Fair Wages Policy, adopted in the same year to protect people employed on federal government contracts and on projects supported by public funds. The Department's work focused on two areas, industrial relations and manpower supply, until January 1, 1966 when all manpower activities were transferred to the Department of Manpower and Immigration.

The industrial relations legislation now administered by the Canada Department of Labour applies to employers, employees and trade unions within federal jurisdiction. The Department is responsible for conciliation procedures in industrial disputes, investigating complaints of unfair labour practices, refusals to bargain and violations of legislation, processing trade union applications for certification and decertification and conducting representation votes. It determines wage rates and hours of work as far as federal government contracts for construction or supplies are concerned, and promotes improved industrial relations through joint union-management consultation and by preventive mediation through industry specialists. The Department is also responsible for administering assistance granted under the Automotive Manufacturing Assistance Regulations and the Adjustment Assistance Benefits Program for displaced workers in the textile and clothing industries.

Much of the legislation regulating employment practices, labour standards, safety and industrial regulations was integrated in the Canada Labour Code which came into force on July 15, 1971. It is discussed later in this chapter.

The Department's over-all objective is to achieve economic and social progress by establishing a climate of good industrial relations promoted through three main programs: the Industrial Relations program encompassing the Conciliation and Arbitration Branch, the Employee Representation Branch, the Fair Employment Practices Branch and the Labour-Management Consultation Branch; the Employment Standards program covering the Labour Standards Branch, the Accident Prevention and Compensation Branch and the Women's Bureau; the Research and Development program comprising the Economics and Research Branch, the International Labour Affairs Branch, the Legislative Research Branch and Library Services.

The Department maintains records of labour legislation in the provinces and in other countries and provides liaison between the International Labour Organization and the federal and provincial governments. As part of a broad publication program it publishes the monthly *Labour Gazette*.

8.1.2 Department of Manpower and Immigration

The Department of Manpower and Immigration recruits and develops manpower resources in line with the needs of the economy. Two main sources are used to supply the labour market: counselling and, where necessary, training and relocation to employ domestic workers; and introduction of new manpower through immigration.

Operations Canada distinguishes the Department's domestic field activities from those at head office and at offices abroad; it comprises five regional headquarters, some 390 Canada Manpower Centres and 95 Immigration Centres in Canada. Regional directors-general, responsible for both manpower and immigration activities in the field, report to the Assistant Deputy Minister, Operations, at head office. The objectives of Operations Canada are: to provide an effective employment service for both workers and employers through strategically located Canada Manpower Centres, to help workers attain their full potential through counselling or referral to skill development and upgrading programs; to assist employers in recruiting skilled workers and in long-range manpower planning by providing up-to-date

occupational and labour market information; to help labour and management adapt to technological change by assisting them to co-operate in manpower adjustment programs; to provide reception, settlement and job placement services for immigrants; and to process documents for international travellers and enforce the Immigration Act and Regulations within Canada, providing facilities to handle applications from Canadians wishing to sponsor or nominate relatives.

In the fiscal year ended March 31, 1972, Canada Manpower Centres assisted some 902,000 persons, excluding casual workers, to find continuing employment, and referred an additional 308,000 clients to full- or part-time courses under the Canada Manpower Training Program. In the same period, some 17,000 clients were referred to federal-provincial rehabilitation programs, and more than 70,000 workers and trainees were granted moving and transportation assistance under the Canada Manpower Mobility Program.

Manpower Division. Under the direction of the Assistant Deputy Minister, Manpower, the Division's four branches administer employment programs and services through Canada Manpower Centres. The Employer Services Branch deals with the demand side of the labour market, providing guidelines in the development and utilization of employment services for employers and specialized information on industrial needs. The Branch directs the operations of the Canada Manpower Consultative Service which assists industries undergoing manpower dislocations as a result of technological change. It also administers the Canada Manpower Mobility Program to facilitate the movement of workers to areas of job opportunity. The Manpower Utilization Branch is concerned with the supply side of the labour market. It formulates policies and guidelines for employment counselling and aptitude and achievement tests used by Canada Manpower Centre counsellors. The Branch also administers programs to assist new members of the labour force and students seeking summer employment. The Manpower Training Branch directs programs to help improve the qualifications of under-employed, unemployed or disadvantaged adult workers. Training courses are purchased from provincial or private schools or through contracts with employers, and participants receive wage reimbursements or training allowances. The Special Programs Branch co-ordinates the application of all manpower programs and services to the needs of disadvantaged unemployed persons in the labour force.

In 1972-73 the federal government continued the Special Employment Plan, introduced in October 1971, to alleviate seasonal unemployment while upgrading the skills of workers and contributing to community improvement and economic growth. The Department of Manpower and Immigration is responsible for two elements of the Plan: the Local Initiatives Program, which in 1971-72 produced some 92,500 jobs through 5,700 community projects conceived, organized and managed by private citizens and funded by the Department; and the Canada Manpower Training-on-the-Job Program through which more than 42,500 jobs were created in the winter of 1971-72 by some 12,300 training contracts between private employers and the Department.

Immigration Division. Under the Assistant Deputy Minister, Immigration, the Division is responsible for administering the Immigration Act and Regulations. The Division operates a Foreign Service to select, examine and move immigrants to Canada, and a Home Service Branch which provides procedural guidelines for field operations in Canada including admission of immigrants and non-immigrants, apprehension of persons who contravene Canadian laws after being admitted or gaining illegal entry, and removal from the country of those liable to deportation.

Program Development Service. Under the direction of an Assistant Deputy Minister, this Service performs a research, development and evaluation function. It provides labour market information for Canada Manpower Centres, immigration offices and other government departments, and measures the over-all social and economic impact of the Department's policies.

Administration Division. Headed by an Assistant Deputy Minister, the Administration Division comprises units responsible for providing professional and technical support to line management: information service, personnel, financial management, data processing, organization and methods, security and general administrative services.

8.1.3 Federal and provincial labour legislation

8.1.3.1 Jurisdictions

The Canada Labour Code (RSC 1970, c.L-1) applies only to federal undertakings and any other operations that Parliament declares are for the general advantage of Canada or two or more of its provinces. The Code consolidated previous legislation regulating employment practices, labour standards, etc., in the federal jurisdiction.

Because it imposes conditions on the rights of the employer and employee to enter into a contract of employment, labour legislation is, generally speaking, law in relation to civil rights and provincial legislatures are authorized to make laws in relation both to local works and to property and civil rights. Power to enact labour legislation has become, therefore, largely a provincial prerogative, under which a large body of legislation has been enacted affecting the employment relationship in such fields as working hours, minimum wages, the physical conditions of workplaces, apprenticeship and training, wage payment and wage collection, labour-management relations and workmen's compensation.

8.1.3.2 Federal labour legislation

Industrial relations. Part V of the Canada Labour Code (Industrial Relations) contains the former Industrial Relations and Disputes Investigation Act of 1948. In general, it provides that employees and employers have the right to organize and bargain collectively and that trade unions may be certified as sole bargaining agents for employee groups. Trade unions and employers are required, on notice, to bargain collectively in good faith. Part V of the Code also provides for assistance by conciliation officers and conciliation boards in reaching collective agreements. Employees may change bargaining agents at such times and under such conditions as are set out in this Part of the Code, which also prescribes conditions affecting the duration and renewal of collective agreements. The latter must also provide for the arbitration of disputes concerning their meaning or violation. Part V prohibits unfair labour practices, i.e., the interference with or domination of trade unions by employers or interference, discrimination and coercion in trade union activity. The conditions that must be observed prior to strike and lockout action are also set down.

Industrial inquiry commissions may be appointed to investigate industrial matters or disputes. The Minister of Labour is charged with administering the Code and is directly responsible for the provisions affecting the appointment of conciliation officers, conciliation boards and industrial inquiry commissions, consent to prosecute, and complaints that the Act has been violated or that a party has failed to bargain in good faith.

The Canada Labour Relations Board administers provisions concerning the certification of bargaining agents and, on referral by the Minister, investigates complaints that a party has failed to bargain collectively and to make every reasonable effort to conclude a collective agreement.

Fair employment practices. Part I of the Canada Labour Code (Fair Employment Practices) contains the provisions of the former Fair Employment Practices Act of 1953. It prohibits discrimination in employment based on race, national origin, colour or religion, discrimination by trade unions in regard to membership or employment, the use by employers of employment agencies that practise discrimination, and the use of advertisements or inquiries in connection with employment that express, directly or indirectly, any limitation, specification or preference as to race, colour, religion or national origin.

Labour standards. Part III of the Canada Labour Code (Labour Standards) replaced the Canada Labour (Standards) Code of 1965. The equal pay provisions of Part II of the Code were incorporated by amendment into Part III. The amendment introduced regulations regarding maternity leave, notice of group and individual termination of employment, severance pay and wage garnishment. Changes were also made in the coverage of the legislation and in provisions governing hours of work, minimum wages, annual vacations and general holidays.

The Code sets both standard and maximum hours of work. The overtime rate (one and a half times the regular rate) must be paid after eight hours in a day and 40 hours in a week, to a maximum of 48 hours in a week. Hours may be averaged when an employee's schedule of hours varies from day to day or week to week because of the nature of the work. If the Minister

of Labour is satisfied that exceptional circumstances justify the additional hours, he may issue a permit allowing an employee to exceed the maximum hours. The Governor in Council may make regulations varying the standard and maximum hours for classes of employees in any specified industrial establishment where the Code standards would be unduly prejudicial to the interests of the employees or seriously detrimental to the operation of the establishment. An inquiry must be held before such regulations may be made.

The minimum wage is \$1.90 per hour for all persons 17 years of age or over and \$1.65 per hour for persons under 17 years of age. The Governor in Council may issue orders from time to time increasing the minimum rate.

Employees are entitled to a two-week vacation with pay each year and a holiday with pay on each of the eight general holidays, or substitutes for them.

An employer must give advance notice to the Minister of Labour and the union, with a copy to the Department of Manpower and Immigration, when dismissing 50 or more employees during a four-week period. The length of notice varies according to the number of employees being dismissed: 50-100 employees, eight weeks; 101-300 employees, 12 weeks; more than 300 employees, 16 weeks. In addition, the employer and the trade union must provide the Department of Manpower and Immigration with whatever information it requests to assist the employees. The requirement to give notice may be waived for an industrial establishment or a specified class of employees by an order of the Minister of Labour, subject to any terms or conditions that he may determine.

Under the Code's provisions respecting individual dismissals, every employee with three months service (except a manager, superintendent or member of a profession) is entitled to two weeks notice of termination of his employment. In lieu of such notice, he is entitled to two weeks wages at his regular rate for his regular hours of work for each completed year of employment, up to a maximum of 40 days wages. However, the employer is not required to give severance pay to an employee who is dismissed for just cause or to a person who, on termination of employment, is entitled to a retirement pension.

The maternity protection provisions grant 17 weeks of maternity leave — 11 weeks before and six weeks after childbirth — and ensure job security to women absent from work because of pregnancy. To be eligible for maternity leave, a woman must have been continuously employed by her employer for 12 months. The Code provides for voluntary prenatal leave up to 11 weeks before the anticipated date of delivery, and this period extends to the actual date of confinement.

The Code prohibits an employer from paying men and women employees at different rates if they work in the same establishment at equally demanding jobs under the same or similar conditions and also prohibits an employer from dismissing, laying off or suspending an employee solely because of garnishment.

Safety of employees. Part IV of the Canada Labour Code (Safety of Employees) incorporates the Canada Labour (Safety) Code of 1968, which was the first general safety legislation passed by the Parliament of Canada. To ensure safe working conditions for all employees in industries and undertakings under federal jurisdiction, Part IV: provides for all the elements of a complete industrial safety program; obliges employers and employees to perform their duties in a safe manner and authorizes the making of regulations for dealing with occupational safety problems; complements other federal laws and provincial legislation; authorizes advisory committees and special task forces to assist in developing the program under continuous consultation among federal and provincial government departments, industry and organized labour; and provides for research into causes and prevention of accidents and for an extended safety education program. Regional safety officers and federally authorized provincial inspectors apply the safety regulations.

As at January 31, 1972, regulations were in force governing coal mine safety, elevating devices, first aid, machine-guarding accident investigation and reporting, noise control, hand tools, fire safety, temporary work structures, confined spaces, and adequate lighting.

Fair wages policy. Wages and hours on government construction contracts are regulated by the Fair Wages and Hours of Labour Act and Regulations. The rates are never less than the minimum hourly rate prescribed by Part III (Labour Standards) of the Canada Labour Code. Wages and hours of work on contracts for equipment and supplies are regulated by Order in Council.

8.1.3.3 Provincial labour legislation

Industrial relations. All provinces have legislation similar in principle to Part V of the Canada Labour Code, designed to establish harmonious relations between employers and employees and to facilitate the settlement of industrial disputes. These laws guarantee freedom of association and the right to organize, establish machinery (labour relations boards or other administrative systems) for the certification of a trade union as the exclusive bargaining agent of an appropriate unit of employees, and require an employer to bargain with the certified trade union representing his employees.

Alberta, Ontario and New Brunswick have special provisions for accrediting employer organizations in the construction industry; in British Columbia accreditation provisions are not limited to the construction industry. Most of the laws require the parties to comply with the conciliation or mediation procedures laid down in the legislation before a strike or lockout may legally take place; every collective agreement must provide machinery for settling disputes arising out of the agreement, and prohibit strikes and lockouts while an agreement is in effect. All of them prohibit defined unfair labour practices and prescribe penalties. In some provinces, certain groups such as public servants, policemen, firemen, teachers and hospital workers are governed by special legislation.

Hours of work. Hours are limited in Alberta and British Columbia to eight a day and 44 a week, and in Ontario to eight a day and 48 a week. The Ontario Act requires, with some exceptions, that one and a half times the regular rate be paid for work done, under permit, beyond the 48-hour limit. The Manitoba and Saskatchewan Acts do not limit daily and weekly hours but require the payment of one and a half times the regular rate if work is continued after eight and 44 hours in Manitoba and eight and 40 in Saskatchewan. Some exceptions are provided for in all five Acts.

Minimum wages. All jurisdictions have enacted minimum wage legislation to ensure adequate living standards for workers. These laws vest authority in a minimum-wage-fixing board or the Lieutenant-Governor in Council to establish minimum wages for employees. In most provinces, minimum wage orders now cover almost all employment except farm labour and domestic service; however, farm labourers are covered in Newfoundland and certain farm-related occupations are covered in Ontario. Minimum rates set by the orders apply throughout the province and, except in Prince Edward Island, are the same for both sexes. Most jurisdictions also set special minimum rates for young workers.

As at January 1, 1973, the provincial and territorial minimum hourly wage rates for experienced adult workers were as follows: Newfoundland \$1.40, Prince Edward Island \$1.25 (men) and \$1.10 (women), Nova Scotia \$1.55, New Brunswick \$1.50, Quebec and Ontario \$1.65, Manitoba, Saskatchewan and Alberta \$1.75, British Columbia \$2.00, Yukon Territory \$1.75 and Northwest Territories \$1.50. The federal rate was \$1.90.

Regulation of wages and hours in certain industries. Apart from general hours-of-work laws, other statutes regulate working hours in some industries. Industrial standards legislation is in effect in Newfoundland, Prince Edward Island, Nova Scotia, New Brunswick, Ontario, Saskatchewan and Alberta. These laws provide that a schedule of wage rates and hours of work agreed on by a representative group of employees and employers in an industry or trade may, with government approval, be given statutory effect by Order in Council. Such wage rates and hours then become the minimum terms of employment for the entire industry or trade in the area. An advisory committee, usually equally representative of employers and employees, is established to assist in enforcing a schedule. This type of legislation is used fairly extensively in the building trades, the clothing industries, barbering, and a few other industries. In Newfoundland, Nova Scotia and New Brunswick, schedules have been issued only for certain construction trades in some areas. In Ontario, schedules for the garment trades and the fur industry apply throughout the province and a substantial number of schedules apply to various construction trades and to barbering in specified areas.

Under the Quebec Collective Agreement Decrees Act, certain terms of a collective agreement, including those dealing with hours and wages, may be made binding on all employers and employees in the industry concerned in a defined area, provided the parties to the agreement represent a sufficient proportion of the industry. The standards made binding

under this procedure are contained in a decree, which has the force of law. Approximately 85 decrees applying to the garment trades, barbering and hairdressing, commercial establishments, garages and service stations, and other industries and services are in effect; a number of them apply throughout the province. Working conditions in the construction industry are governed by decrees under a separate Act — the Construction Industry Labour Relations Act, 1968.

The Construction Industry Wages Act in Manitoba, which applies to both private and public construction work, provides for setting minimum wage rates and maximum hours of work at regular rates for employees in the construction industry, on the recommendation of a board equally representative of employers and employees, with a member of the public as chairman. Under this Act, annual schedules set the regular work week and hourly wage rates for various classifications of workers in the heavy construction industry, in the Greater Winnipeg building construction industry, and in rural building construction.

Annual vacations and public holidays. All provinces have annual vacations legislation applicable to most industries. The general standard is two weeks. In Ontario workers are entitled to a one-week vacation after the first year of employment, and two weeks after the second and each subsequent year and, in Manitoba and Saskatchewan, three weeks after five years of service. Alberta, British Columbia, Manitoba, Nova Scotia, Ontario and Saskatchewan have enacted legislation of general application dealing with public holidays. The number of holidays varies from seven to nine and the provisions for payment also vary.

Vacation pay equals 4% of annual earnings in Newfoundland, Nova Scotia, Prince Edward Island, New Brunswick, Quebec and Ontario (2% in the first year); in Manitoba and Alberta, regular pay; and in Saskatchewan 1/26th of annual earnings in the first four years and 3/52nds of annual earnings after the fifth year. The federal rate is 4%.

Termination of employment. In Nova Scotia, Saskatchewan and Prince Edward Island an employer must give an individual employee one week's written notice of termination; in Manitoba and Newfoundland, one regular pay period. In Ontario, the length of notice varies with the period of employment: three months to two years, one week; two to five years, two weeks; five to ten years, four weeks; ten years or more, eight weeks. Quebec requires the employer of a domestic, a servant, journeyman or labourer to give one week's notice of termination if the employee is hired by the week, two weeks' notice if hired by the month, and a month's notice if hired by the year. Newfoundland, Nova Scotia, Prince Edward Island, Quebec and Manitoba require an employee to give similar notice on quitting his job.

In addition, Ontario and Quebec require an employer to give advance notice of a projected termination of employment or lay-off of a group of employees. The Ontario group notice requirement applies when an employer plans to terminate the employment of 50 or more persons within four weeks or less. The length of notice is related to the number of workers involved: 50-200, eight weeks; 201-500, 12 weeks; 501 or more, 16 weeks. The Quebec group notice requirement applies when an employer contemplates the dismissal of ten or more employees within a period of two months. Again, the length of notice required varies with the number of workers involved: 10-100, two months; 101-300, three months; 301 and over, four months.

Maternity protection. Five provinces have legislation to ensure the health and job security of women workers before and after childbirth. The Ontario, British Columbia and New Brunswick Acts provide for six weeks leave before childbirth and six after; the Manitoba and Nova Scotia Acts allow 11 weeks before and six after. Except in New Brunswick the postnatal leave is compulsory, unless a medical doctor authorizes an earlier return to work. In all five provinces, the right to maternity leave is supplemented by a guarantee that an employee will not lose her employment because of absence on maternity leave.

Anti-discrimination laws. All provinces have adopted fair employment practices laws forbidding discrimination in hiring, in conditions of employment and in trade union membership on grounds of race, colour, religion and, except Prince Edward Island, sex.

In British Columbia, Alberta, Ontario and Newfoundland, discrimination in employment and trade union membership on grounds of age is prohibited. All provinces but Prince Edward Island have provisions in separate equal pay Acts or in human rights or labour standards legislation that forbid discrimination in rates of pay solely on the basis of sex.

Apprenticeship. All provinces have apprenticeship laws providing for an organized procedure of on-the-job training and school instruction in designated skilled trades, and statutory provision is made in most provinces for issuing qualification certificates, on application, to qualified tradesmen in certain trades. In some provinces, legislation is in effect making it mandatory for certain classes of tradesmen to hold a certificate of competency.

Accident prevention. In most provinces factory or industrial safety Acts and workmen's compensation boards regulate conditions of sanitation, heating, lighting and ventilation and prescribe machine-guarding practices to protect the health and safety of workers. Legal standards control the design and operation of mechanical equipment, electrical installations, the use of gas- and oil-burning machinery and radiation-producing equipment such as laser sources, and set qualifications for workers using such equipment. Construction and excavation work are also regulated by specified safety standards.

Workmen's compensation. All provinces have legislation providing for compensation payments in cases of accidental injury at work or to persons disabled as a result of a specified industrial disease. To be entitled to benefits, a worker must be employed in an industry covered by the Act at the time of injury. Compensation is not payable, however, where the disability lasts less than a stated number of days (varying from one to four in the provincial Acts), or where the injury is due to the worker's own misconduct. An employee who is entitled to compensation has no right of action against his employer for injury sustained during employment.

The Acts provide for a compulsory system of collective liability on the part of employers. Industries covered are divided into classes or groups, according to hazard. Employers are required to contribute to the Accident Fund at a rate set according to the accident experience of the class or group. Each class is liable for the costs of all accidents occurring in that class.

The laws apply to enumerated categories but the range of industries covered by each Act is very wide. The principal exceptions are farm workers (who are not covered except in Ontario), domestic servants, casual workers, employees of financial, insurance and professional undertakings, employees of non-profit religious or charitable organizations, and workers in certain service industries in most provinces, for example, barber shops and beauty parlours. Enterprises with fewer than a specified number of employees are exempted from the Act in some provinces, but generally may be included if the employer applies for coverage.

Benefits for disability are based on 75% of earnings, subject to an annual ceiling. Where disability is permanent, a life pension is paid, irrespective of future earnings. Medical benefits are provided without limitation, regardless of a waiting period, and rehabilitation services are available where necessary. Where death results from an employment injury, prescribed monthly payments are made to dependants. Compensation benefits in Quebec and British Columbia are tied to the cost-of-living index. All the provinces frequently review and increase the scales and ceilings of compensation benefits.

A federal Act provides for accident compensation for federal government employees according to the scale of benefits provided by the Act of the province in which the employee is usually employed. Seamen who are not under a provincial Workmen's Compensation Act are entitled to compensation under the federal Merchant Seamen Compensation Act.

All provincial workmen's compensation legislation was amended in 1972, increasing benefits in most provinces. The ceiling on maximum annual earnings on which compensation payments are based was increased from \$6,600 to \$7,600 in Alberta, and in British Columbia from \$7,600 to \$8,600, effective January 1, 1973. In Saskatchewan, the ceiling was raised from \$6,600 to \$8,400 and the average weekly earnings on which the amount of compensation is based was raised from \$126.92 4/13 to \$161.53 11/13, effective July 1, 1972.

Four provinces amended provisions governing compensation for disability. In Alberta, British Columbia, Manitoba and Nova Scotia, the new monthly rates for permanent total disability are, respectively, \$225, \$250, \$175 or earnings if less, and \$150; new weekly rates for temporary total disability for the same provinces are \$50 or earnings if less, \$39.95 or earnings if less, \$40, and \$47 or earnings if less, respectively.

British Columbia eliminated the three-day waiting period. Disability payment starts on the day following injury. Seven other provinces have a one-day waiting period, New Brunswick has three and Nova Scotia four.

Changes in dependants' allowances included increases in widows' monthly pensions in four provinces: British Columbia from \$145.85 to \$162.15 (including the increase of 4% caused

by the change in the consumer price index); Quebec from \$142.80 to \$147.08 (following the Quebec Pension Plan 3% adjustment tied to the consumer price index increase); Saskatchewan from \$127.50 to \$133.90; Manitoba from \$120 to \$150. Children's monthly allowances were raised by \$5 in Prince Edward Island (to \$30 for child with parent and \$40 for an orphan); Quebec to \$38.25 for child with parent, \$60.11 for an orphan; Manitoba by \$10 to \$60 (under 16), \$70 (over 16 at school) and orphans, \$70 and \$80; Saskatchewan from \$50 to \$52.50 for a child under 16 with parent and from \$65 to \$68.25 for an orphan under 16; British Columbia, child under 16 with parent from \$48.77 to \$52.79, orphan under 16 \$54.80 to \$59.39 — children over 16 at school receive corresponding increases. The maximum funeral allowance in British Columbia was increased from \$265 to \$380 and the allowance for burial or cremation charges from \$85 to \$120. The lump sum payment to a dependent widow or foster-mother in Canada is doubled to \$500. The increase in Manitoba is from \$500 to \$650. A Manitoba amendment makes the existing maximum burial allowance of \$300 applicable to cremation and the \$50 toward a burial plot applicable to an ash plot, urn or ash storage place.

An addition to the Saskatchewan Act provides for the appointment of a Workmen's Advocate, as an officer of the Department of Labour; he may assist workmen or their dependants in advancing compensation claims. British Columbia, Manitoba, Nova Scotia and Ontario have similar services. Saskatchewan repealed Part IV of the Act (accident prevention) now redundant in light of the comprehensive industrial safety program brought into being by the Occupational Health Act.

Newfoundland made special provision for payment of compensation in respect of certain St. Lawrence fluorspar miners. In Alberta, entitlement for persons in institutions (correctional, and mental hospitals) was substantially improved. British Columbia extended coverage to volunteer employment undertaken in the public interest (mountain rescue, etc.). Manitoba established Medical and Neurosis Review Panels and expanded provisions for accidents occurring outside the province.

8.2 The labour force

8.2.1 The labour force survey

Since 1946, reliable information for analysis of employment in Canada, at the national level and for the five major regions, has been provided through a labour force survey. Between November 1945 and November 1952, quarterly surveys were taken and since then the survey has been carried out on a monthly basis. The sample used in the survey has been designed to represent all persons in the population 14 years of age or over, residing in Canada, with the exception of residents of the Yukon Territory and the Northwest Territories, Indians living on reserves, inmates of institutions and members of the Armed Forces. Interviews are carried out in approximately 30,000 households chosen by area sampling methods across the country. In the survey, people are classified on the basis of their activity during the reference week, i.e., the week prior to the survey interview week.

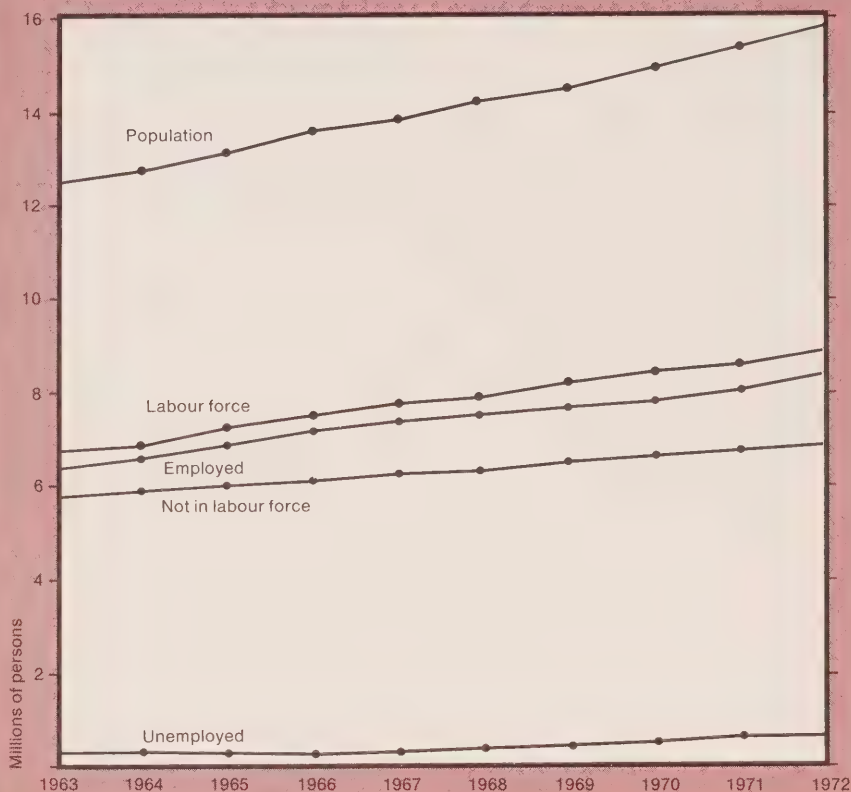
The civilian labour force is composed of that portion of the civilian non-institutional population 14 years of age or over who, during the reference week, were employed or unemployed.

The employed include all persons who, during the reference week: did any work for pay or profit; did any work which contributed to the running of a farm or business operated by a related member of the household; or had a job, but were not at work, because of bad weather, illness, industrial dispute or vacation, or because they were taking time off for other reasons. People who had jobs but did not work during the reference week and who also looked for work are included in the unemployed as people without work and seeking work.

The unemployed are all those who, through the reference week: were without work and seeking work, i.e., did not work during the reference week and were looking for work, or would have been looking for work except that they were temporarily ill, were on indefinite or prolonged lay-off, or believed no suitable work was available in the community; were temporarily laid off for the full week, i.e., were waiting to be called back to a job from which they had been laid off for less than 30 days.

Those not in the labour force include all civilians 14 years of age or over (exclusive of the institutional population) who are not classified as employed or unemployed. This category includes people: going to school; keeping house; too old or otherwise unable to work; and

**Estimates of the civilian labour force and its main components, 1963-72
(figures not adjusted for seasonality)**



voluntarily idle or retired. Housewives, students and others who worked part-time are classified as employed or, if they looked for work, as unemployed.

Because they are based on a sample of households, estimates derived from the labour force survey are subject to sampling error. Somewhat different figures might be obtained if a complete census were taken and this difference is called the sampling error of the estimates. In the design and processing of the survey, extensive efforts are made to minimize the sampling error; in general, the percentage of error tends to decrease as the size of the estimate increases. A statistical measure of the sampling error is given in Statistics Canada monthly publication *The labour force* (Catalogue No. 71-001).

8.2.2 The labour force, 1963-72

As revealed in the accompanying chart and in Table 8.1, the period 1963-72 was one of rapid expansion as the actual labour force increased by 2.1 million persons or 31.8%. The number of women in the labour force increased by 57.9%, an advance that was greater, both absolutely and relatively, than the increase of 21.7% experienced by men. The total participation rate (the labour force as a percentage of the population) reached a record high level in 1972 of 56.5% compared with 53.8% in 1963.

In the decade under review, as in the entire postwar period, the male participation rate has been declining; in 1972 the rate was 76.2% compared with 78.5% in 1963 (as calculated from

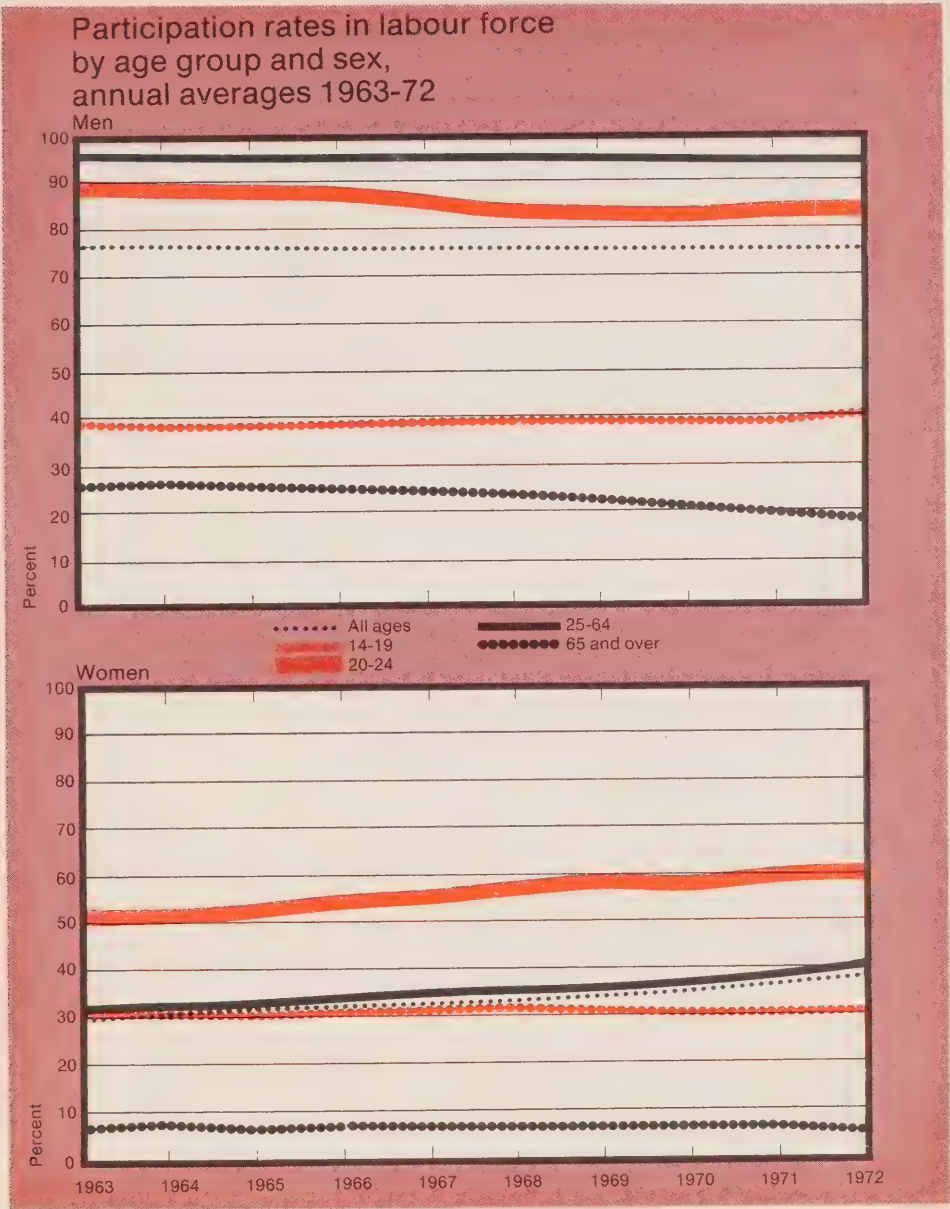


Table 8.2). The second chart shows that the drop in the male participation rate between 1963 and 1972 was very pronounced among men in the 20-24 age group (88.7% to 84.0%) and in the 65 and over group (26.4% to 18.7%).

The accelerated entry of women into the labour force has more than compensated for the decline in male labour force participation; in 1972 the rate was 37.1% compared with 29.6% in 1963 (as calculated from Table 8.2). As the second chart illustrates the participation rate of women in the 14-19 and 65 and over age groups showed very little change over the period whereas the rate for women 20-64 years of age increased substantially.

The actual total number of persons employed in Canada rose from 6.4 million in 1963 to 8.3 million in 1972 (Table 8.1), an increase shared by all regions of the country (Table 8.3);

employment in the Atlantic region rose by 113,000 (21.6%), in Quebec by 463,000 (26.3%), in Ontario by 836,000 (35.1%), in the Prairie region by 234,000 (20.6%) and in British Columbia by 308,000 (53.9%).

Table 8.4 shows the changes over the decade in the distribution of actual employment by industry. The proportion of persons employed in the service-producing industries continued to increase; the numbers in the goods-producing industries indicated a corresponding decline. Transportation, trade, finance and service accounted for 63.3% of total employment in 1972 compared with 56.4% in 1963. Conversely, the goods-producing industries, comprising agriculture, primary industries, manufacturing and construction, dropped from 43.7% of total employment in 1963 to 36.7% in 1972. The most significant changes occurred in service where the share of total employment rose from 26.3% to 33.0% and in agriculture which recorded a drop from 10.2% to 5.8%. The growth in the service-producing industries was confirmed by the occupation data given in Table 8.5 which shows that the proportion of professional and technical employees rose from 10.6% to 14.2%, clerical rose from 13.4% to 15.4% and service and recreation increased from 11.1% to 12.1% during the period.

On an annual average basis, unemployment as a percentage of the labour force ranged between 3.6% in 1966 and 6.4% in 1971; it averaged 6.3% in 1972. Persons not in the labour force averaged 6.9 million in 1972 compared with 5.8 million in 1963, an increase of 18.5%.

8.3 Employment statistics

8.3.1 Employment, earnings and hours

Monthly records of employment have been collected from larger business establishments since 1921. The surveys currently conducted by Statistics Canada collect data on payrolls, per capita wages and salaries, hours of work, hourly and weekly wages and the number of salaried and wage-earning employees with their respective weekly salaries. Employment indexes are based on 1961 = 100; the data are compiled on the 1960 Standard Industrial Classification.

The survey covers all industries except agriculture, fishing and trapping, education and related services, and defence. Health and welfare services, religious organizations, public administration, and private households are also excluded.

The monthly employment statistics relate to the number of employees drawing pay in the last pay period in the month. Data are requested for all classes of employees except homeworkers and casual employees working less than one day in the pay period. Owners and firm members are also excluded. The respondents report the gross wages and salaries paid in the last pay period in the month, before deductions are made for income tax, unemployment insurance, etc. The reported payrolls represent gross remuneration for services rendered and paid absences in the period specified, including salaries, commissions, piece-work and time-work payments, and such items as shift premiums and regularly paid production, and incentive and cost-of-living bonuses. The statistics on hours relate to the regular and overtime hours worked by those wage-earners for whom records of hours are maintained, and also to hours credited to wage-earners absent on paid leave during the reported period. If the reported period exceeds one week, the payroll and hours data are reduced to weekly equivalents.

Employment. Table 8.6 indicates that, over the 1966-71 period, the industrial composite index of employment for Canada rose by 5.9%. Among the industry divisions showing gains over this period, service led with a 34.1% advance, followed by finance, insurance and real estate (21.3%), trade (15.0%), mining (7.4%) and transportation, communication and other utilities (6.5%). Declines occurred in forestry (25.1%), construction (10.4%) and manufacturing (1.5%) during the same period. Compared with 1970, the industrial composite index for 1971 was up 0.6%.

Annual average index numbers of employment for the years 1967-71 are shown by industrial division and group in Table 8.7; by province and for January 1971 to July 1972 in Table 8.8; and by metropolitan area and for January 1971 to July 1972 in Table 8.9.

Weekly earnings. Average weekly earnings have increased substantially in the years for which current payroll statistics have been collected, rising from \$23.44 in 1939 to \$102.76 in 1967 and \$137.65 in 1971. The upward movement gained momentum beginning in 1946 and average annual increases for the 1946-52 period were more than double those for the 1939-45 period. After 1952 the rate of increase, in percentage terms, fell somewhat, particularly during the 1959-62 period. In the recent period, gains have been 7.8% in 1970 and 8.5% in 1971. Annual index numbers of employment and average weekly earnings for 1969-71 are presented by

industry, province and urban area in Table 8.10. Table 8.11 shows annual average weekly earnings by industrial division for the years 1967-71 and monthly averages for 1971 and January-July 1972.

Hours and earnings of hourly rated wage-earners. The monthly survey of employment and payrolls covers statistics of hours of work and paid absence of those wage-earners for whom records of hours are maintained, together with the corresponding totals of gross wages paid. These wage-earners are mainly hourly rated production workers; information on hours is frequently not kept by employers for ancillary workers nor, in many industries and establishments, for any wage-earners. Salaried employees are excluded by definition from the series. As a result of these exclusions, data are available for fewer industries and workers than are covered in the employment and average weekly earnings statistics.

During the period 1966-71, average weekly hours declined slightly but average hourly and weekly wages rose substantially. For the most part, upward wage-rate revisions in all industries were responsible for the increases. Technological changes, which in many cases involve the employment of more highly skilled workers at the expense of those in the lower-paid occupations, also contributed to the advance of average hourly earnings. As indicated in Table 8.12, from 1966 to 1971 average hourly earnings rose by 69.6% in construction, by 55.4% in mining and by 45.8% in manufacturing. During the same period, average weekly hours declined by 7.1% in construction, by 4.3% in mining and by 2.7% in manufacturing. Comparing 1971 to 1970, average hourly earnings increased by 12.8% in construction, by 9.0% in manufacturing and 8.9% in mining; weekly hours dropped 1.5% in mining and remained unchanged in manufacturing and construction. Table 8.13 presents average weekly hours and hourly earnings in specified industries and selected urban areas for 1969-71.

8.3.2 Earnings and hours in retail trade

Until 1969 the annual survey of earnings and hours of male and female employees covered only the manufacturing industry. Data from the 1969 survey were published in the Statistics Canada report *Earnings and hours of work in manufacturing* (Catalogue No. 72-204). In line with a decision to survey a different industry division or its component every year, Statistics Canada collected data from retail trade establishments in 1970.

The retail trade survey. All large retail trade establishments (20 or more employees in any month of the year) and a sample of small establishments (fewer than 20 employees) were asked to supply data. The reference period was the last payweek in September 1970. The percentage distribution of full-time, part-time and casual and head office employees engaged in the retail trade in Canada and the provinces is presented in Table 8.14. Table 8.15 sets out average weekly earnings, average hourly earnings and average weekly hours for men and women by employee status in Canada and the provinces. More detailed information and separate data for large and small establishments are given in the report *Earnings and hours of work in Canada, retail trade industry* (Catalogue No. 72-601).

8.3.3 Estimates of labour income

Labour income, as shown in Table 8.16, is defined as the compensation paid to employees for services rendered comprising wages and salaries and supplementary labour income. It includes all such payments made to residents of Canada (Canadians employed by the federal government abroad are considered to be residents of Canada) except those made to the Armed Forces. Remuneration to the latter fits the definition of labour income but is excluded here as it is treated as a separate item in the national income accounts.

Wages and salaries include directors' fees, bonuses, commissions, taxable allowances and benefits. The gross remuneration concept has been adopted, and wages and salaries are measured before deductions for income tax, unemployment insurance, pension funds, etc. Supplementary labour income, which is defined as payments made by employers for the future benefit of employees, is composed of employers' contributions to employee welfare and pension funds including the Canada and Quebec Pension Plans, to the workmen's compensation funds, and to unemployment insurance.

Estimates of labour income based on the 1948 Standard Industrial Classification (SIC) have been published for 1926-69; those based on the 1960 SIC were published in 1969 for the period 1951-68 and then projected to the end of 1971. The entire series 1951-71 has been revised and carried back to 1947.

8.3.4 Employer labour costs

The labour costs survey, instituted in 1967 as a joint Statistics Canada - Canada Department of Labour project, is designed to measure the content of the total pay package. The results are of value in collective bargaining, in improving estimates of labour income and in developing better productivity measures. The survey also provides cost data for the various items studied in the Canada Department of Labour's survey of working conditions. In addition, all levels of government use the data in developing labour policy. The survey is conducted each year in one or more major industry divisions. At present a particular industry is surveyed every three or four years. Consequently, sufficient data are not yet available to determine trends over a period of time. When the results of the 1971 survey of the manufacturing industry have been tabulated, however, it will be possible to make comparisons between the years 1968 and 1971 for this industry.

The data already available permit comparisons of the total pay package components in those major industry divisions for which surveys have been conducted. In order to minimize the effects of general increases in salaries and wages, the labour cost estimates in Tables 8.17-8.20 are shown as percentages of payments made by the employer for regular work performed during normal working hours. Using the figures in Table 8.17, the actual cost of every \$100 in basic pay paid by an employer in manufacturing, on the average, for regular work in 1968, can be calculated to be \$128.14. Average weekly earnings in 1970 were \$132.75 in manufacturing, \$164.70 in mining, \$120.52 in finance and \$142.35 in transportation. The results of the labour costs survey show that the average amounts paid weekly for regular work in these industries in 1970 were \$113.61, \$134.62, \$108.15 and \$120.90, and that the corresponding total wage packages were \$145.58, \$181.56, \$131.28 and \$156.31, respectively.

The labour cost items studied reflect the differences in the nature of each industry and the occupations of those employed. The approximate ratios of salaried (office) employees to wage-earners (non-office) are: manufacturing 27:73; mining 30:70; finance 94:6; transportation 35:65. However, since the occupations of salaried employees are different from those of other employees, the relative costs for each group are compared separately in Table 8.18.

The labour costs show that additional costs for time worked are more significant for wage-earners than for salaried employees and that such costs are substantial in the mining industry and of minor consequence in finance, insurance and real estate. These costs include overtime (straight-time and premium pay), shift work and payments made to employees for work performed under special conditions. In the mining industry underground production bonuses for wage-earners account for 6.5% of basic pay. Overtime costs for wage-earners are slightly higher in mining (11.8%) than in manufacturing (10.9%). In the transportation industry overtime costs are slightly less than in manufacturing. On the other hand the additional cost for overtime in finance, insurance and real estate is only 2%. For salaried employees the overtime costs in all four industries are similarly low. One third of the total overtime costs represents premium pay.

Paid absence represents a significant additional cost to employers. The average cost for all employers expressed as a percentage of basic pay for regular work ranges from 9.5% in manufacturing to 11.8% in transportation. Table 8.19 illustrates the relative significance of the various components of paid absence for all employees, and for salaried employees and wage-earners separately. Employers usually provide sickness benefits through insurance plans rather than by continuing pay during illness. For salaried employees, on the other hand, the salary is usually continued. Many employers do not keep accurate records of absences for sickness and for personal leave; consequently the costs for these items are understated.

Miscellaneous payments to employees comprise termination pay, non-production bonuses, taxable benefits (such as board and lodging) and retroactive pay for a preceding year, etc. Expressed as percentages of basic pay for regular work they range from 1.0% in transportation to 2.3% in finance. For investment companies and security dealers, non-production bonuses are significant — 3.6% of basic pay.

Employer payments to employee welfare and benefit plans comprise payments required under federal and provincial statutes and payments made to other plans, either as the result of collective agreements or on a voluntary basis. Table 8.20 illustrates the relative significance of the various expenditures for all employees, and for salaried employees and for wage-earners separately. The figures for workmen's compensation reflect the relative differences in the exposure of employees to industrial injury; figures for private pension plans indicate the

numbers of employees who are employed in establishments which provide pensions in addition to the Canada and Quebec plans. The labour costs survey shows that for wage-earners in the mining industry there is a greater emphasis on direct payments to employees than on pensions. The figures for life and health insurance plans include additional costs for weekly indemnity plans to provide benefits to wage-earners who are absent through illness.

8.3.5 Wage rates, hours and working conditions

Statistics on occupational wage rates by industry and locality, with standard weekly hours of labour, are compiled by the Canada Department of Labour and published in the annual report *Wage rates, salaries and hours of labour*. The statistics are based on an annual survey covering some 38,000 establishments in most industries and apply to the last normal pay period preceding October 1. Average wage rates (excluding overtime) of time-workers and average straight-time earnings of piece-workers and other incentive workers for selected occupations are shown separately in the report but are combined to calculate the industry index numbers shown in Table 8.21. The indexes measure changes in wage rates for non-office employees below the rank of foreman. They do not, however, provide a basis for comparing the level of wages in one industry with that in another. The construction wage index rose from 195.5 in 1970 to 223.7 in 1971, that of mining from 159.4 to 169.9, service from 166.4 to 178.0 and local government from 183.2 to 200.2. Information on concepts and methods of developing these statistics is given in the annual report.

Table 8.22 presents average wage and salary data for 12 Canadian cities on October 1, 1971. Hourly and weekly wage rates are listed for 23 occupations in the construction and manufacturing industries; salaries are specified for men and for women engaged in several office occupations.

Table 8.23 gives summary data on working conditions of plant and office employees in manufacturing industries and in all industries for the years 1969-71. The percentages in this table denote the proportions that plant or office employees of establishments reporting specific items bear to the total number of all such employees in all establishments replying to the survey; they are not necessarily the proportions of employees actually covered by the various items. Further details and additional information are given in the annual report *Working conditions in Canadian industry*, compiled and published by the Canada Department of Labour and based on a survey at May 1 each year of some 38,000 reporting units.

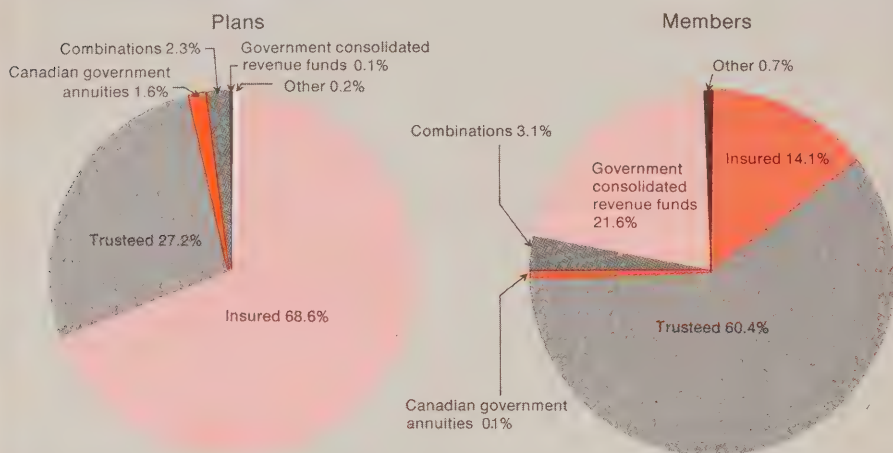
8.4 Pension plans

Occupational pension plans in Canada have a long history. One of the earliest systematic programs was introduced by the federal government in 1870; the Grand Trunk Railway plan for clerical and indoor staff followed in 1874. Although the pension system did not grow significantly until the 1940s, the accelerated growth rate of that period continued through the 1950s and 1960s. A recent survey showed that over the past decade the number of plans increased by nearly 80%, from 9,000 in 1960 to well over 16,000 plans at the beginning of 1970; pension coverage was extended to an additional million workers, increasing participation from 1.8 million in 1960 to over 2.8 million persons at the beginning of 1970. With coverage at this level, nearly 40% of paid workers in Canada participated in a pension plan.

Pension plans were in operation in virtually all industrial sectors, but the degree of coverage varied widely from industry to industry. The most comprehensive coverage was in public administration and defence, where almost all of the 761,000 employees of all government levels, the Armed Forces and the RCMP participated in a plan. Two out of three paid workers in mining and over 40% in manufacturing were covered. In transportation and communication, with some of the oldest and largest plans in the country such as those in the railway, telephone and trucking companies, almost half of the paid workers (337,800 workers) had post-retirement protection. Of the employees working in finance, insurance and real estate about 45% were covered; approximately one in four workers in community, business and personal services — which includes hospitals, religious and welfare organizations and professional agencies, etc. — participated in occupational pension programs. Construction, with 107,400 plan members, had 23% of the workers covered; and trade, both retail and wholesale, with 142,500 participants, provided coverage for 13% of workers in the industry.

Of the more than 16,000 pension plans in Canada at the beginning of 1970, 11,000 — nearly 70% — were funded by insurance companies, but these accounted for less than 15% of the members or 398,700 out of 2.8 million. Plans with the largest coverage were those designed

Pension plans and members by funding agency



for government employees; employee contributions are paid into government consolidated revenue funds which are not held in the form of cash or invested securities. Although only 19 in number, these plans applied to a total of 607,800 public servants including those covered by the federal superannuation plan, the Armed Forces, the RCMP and public servants in five provinces.

Aside from these public service plans, the larger plans tended to use either personal or corporate trustees as funding agencies. Although only one quarter of all occupational plans were trusted, they covered more than 60% of the members — some 1.7 million out of the total of 2.8 million persons. The relationship of the various types of plans by funding agency may be seen in the accompanying chart.

Total contributions paid by and on behalf of the 2.8 million members in 1970 amounted to over \$1,700 million with more than \$1,000 million paid into trusted funds. With an annual cash inflow of this magnitude, trusted pension funds have become one of the largest single pools of money in the country, growing at a rate of 10% to 12% annually, with the book value of assets accumulated by these funds reaching a record total of \$12,461 million by the end of 1971. Because the growth of these funds is so rapid and the total accumulated so large, they are surveyed annually by Statistics Canada; the results are published in *Trusted pension plans, financial statistics* (Catalogue No. 74-201). A summary tabulation of the key financial data related to these funds is presented in Table 8.24.

The Canada and Quebec Pension Plans are discussed in Chapter 6.

Federal government annuities. Since 1908 the federal government has sold annuities and industrial pension plans under the Government Annuities Act. Decreased need for this type of service has resulted in the program's reduction. No salesmen have been employed since 1967 but annuities are still available under the Act to those who ask for them. They are now administered by the Unemployment Insurance Commission.

8.5 Unemployment insurance

Unemployment insurance has been part of Canada's social and economic life since the Unemployment Insurance Act was passed in 1940. Since that time various amendments have brought new categories of workers into the plan and contributions and benefit rates have been

raised periodically to meet changing economic conditions. However, until recently, the basic structure of the plan remained unaltered.

In 1968, when Parliament approved upward revisions of both contributions and benefit rates and broadened the scope of coverage, the Unemployment Insurance Commission was instructed to investigate the program and to recommend appropriate changes in philosophy and structure. The Unemployment Insurance Act, 1971, effective June 27, 1971, was the result of extensive study; its basic objectives were to provide assistance to cope with interrupted earnings resulting from unemployment, including unemployment from illness, and to co-operate with other agencies engaged in social development.

The 1971 Act extended coverage to all regular members of the labour force (effective January 2, 1972) for whom there exists an employer-employee relationship. The only non-insurable employees are those who earn less than 20% of the maximum weekly insurable earnings or less than 20 times the provincial hourly minimum wage, whichever is less. Coverage, contributions and benefit entitlement cease at age 70.

Employers and employees absorb the cost of initial benefits and administration; the employer rate is 1.4 times the employee rate. The government share is confined to the cost of extended benefits and the excess cost of initial benefits resulting from a national unemployment rate greater than 4%. There is no fund and employer and employee contributions are adjusted yearly. In 1972 the rate of employee contributions was 90 cents per \$100 of insurable earnings or a maximum of \$1.35 per week. The Department of National Revenue, Taxation collects the contributions. Persons formerly not contributing either because of their occupation or by virtue of being over the salary ceiling are paying a preferred rate for the first three years. For those who had been excluded because of their occupation, the preferred rate is portable. However, persons formerly excluded because of the salary ceiling pay the preferred rate only as long as they remain with the employer they were with on January 2, 1972.

Under the new program, the duration of benefit is not determined solely by how long a person has worked. A claimant can draw benefits for a maximum of 51 weeks depending on his employment history and prevailing economic conditions, providing he has contributed for at least eight weeks in the last 52 and he is available, capable and searching for work. Persons with 20 or more weeks of insured earnings (a "major labour force attachment") are eligible for a wider range of benefit that includes a pre-payment of three weeks of regular benefit for work-shortage lay-offs, benefit payments when the interruption in earnings is caused by illness or pregnancy, and three weeks retirement benefit for older workers.

Sickness benefit is available for a maximum of 15 weeks for persons with a major labour force attachment whose earnings are interrupted by illness, injury or quarantine (excluding workmen's compensation). If a person is taken ill while on regular claim, sickness benefit is available but the combined duration of benefits during the initial benefit period cannot exceed 15 weeks.

Maternity benefit is available for eight weeks before confinement, the week of confinement and six weeks after, to women who have had a major labour force attachment. They must also have been part of the labour force at least ten of the 20 weeks prior to the 30th week before the expected date of confinement.

Retirement benefit, available for three weeks, is paid in a lump sum to claimants with a major labour force attachment who are 65-70 years of age and who have signified they have left the labour force by applying for the Canada Pension Plan or the Quebec Pension Plan, and to persons over 70 years of age. Those over 70 must apply within 32 weeks of their 70th birthday as employment weeks are no longer earned after that time. The benefit is paid without a waiting period and without regard to earnings or availability.

The benefit rate for all claims will be two thirds of average insured earnings in the qualifying period to a maximum of \$100 per week and with a minimum of \$20 per week. For claimants with dependants and whose average qualifying earnings are equal to or less than one third of the maximum weekly insurable earnings, the benefit rate is 75%. During later stages of benefit all claimants with dependants draw benefit at 75% of qualifying earnings subject to the \$100 maximum. In 1973 and future years, the maximum insurable earnings and, therefore, the maximum benefit are subject to adjustment based on an index calculated from earnings of Canadian employees.

Income from employment in excess of 25% of the benefit rate is deducted. In the case of sickness and maternity, proceeds of wage-loss policies are deducted after the waiting period. All work-related income is deducted both during the waiting period and after the waiting period has been served.

The statistics in Table 8.25 summarize the Unemployment Insurance Commission's activities in the years 1968-72. Figures prior to July 1971 are affected by the Unemployment Insurance Act of 1955. It applied to all persons employed under a contract of service except: the Armed Forces; the permanent public service of the federal government; provincial government employees except where insured with the concurrence of the provincial government; certified permanent employees of municipal or public authorities; persons engaged in hunting and trapping, private domestic service, private-duty nursing, and teaching; workers on other than an hourly, daily or piece rate earning more than \$7,800 a year (effective June 30, 1968) unless they elected to continue as insured persons; employees in a charitable institution or in a non-profit hospital except where the institution or hospital agreed to insure certain groups or classes of persons with the Commission's concurrence. All persons paid by the hour, day, or at a piece rate (including a mileage rate) were insured regardless of amount of earnings.

An employee's contribution was determined by his weekly earnings; an equal contribution was required from the employer. The federal government contributed one fifth of the aggregate employer-employee contribution and defrayed administrative expenses. Contributions became payable on July 1, 1941 and benefits on January 27, 1942. By June 26, 1971 a total of \$7,789 million had been paid.

The benefit rates were calculated on the average weekly contributions for the last 30 weeks in the 104 weeks preceding the claim. To qualify for regular benefit, a claimant had to have had at least 30 weekly contributions in the last 104 weeks prior to claim, eight weekly contributions since the start of the last preceding regular benefit period or in the last year prior to claim, whichever was the shorter period, and 24 weekly contributions since the start of the last preceding benefit period, or in the year prior to the claim, whichever was the longer period.

The Act contained a special provision relaxing the regular contribution requirements somewhat during the five and a half months beginning with the first week of December each year. Under this provision, claimants drew "seasonal benefit" if they had at least 15 contribution weeks during the fiscal year, or, failing this, if they had terminated regular benefit since the previous mid-May.

To assess the impact of changing economic conditions on the insurance program, current operational data, such as claims filed and processed and payments made, are collected and published monthly by Statistics Canada. Current claims and payment data are useful for administrative purposes and are also a source of information to the public regarding financial and other aspects of the program. In addition to the monthly data on the operation of the Unemployment Insurance Act, detailed data on persons employed in insurable employment and benefit periods established and terminated are compiled annually and published in *Benefit periods established and terminated under the Unemployment Insurance Act* (Catalogue No. 73-201). Data on persons insured under the Act are obtained from a sample of persons in insurable employment each year. Persons on claim are included.

8.6 Employment injuries and workmen's compensation

Fatal employment injuries. Data on fatal employment injuries, compiled by the Canada Department of Labour, are collected from provincial workmen's compensation boards, the Canadian Transport Commission, other government authorities and press reports. In 1971, 1,060 industrial workers sustained fatal injuries. Collisions, derailments or wrecks caused 289 deaths; falls and slips, 178; being struck by an object, 222; being caught in, on or between objects or vehicles, etc., 85; inhalations, contact, absorptions, ingestions and industrial diseases, 123; contact with electric current, 45; conflagrations, temperature extremes and explosions, 60; and over-exertion, 18. The remaining 40 were the result of various miscellaneous accidents. Table 8.26 presents statistics on fatal employment injuries in 11 industries for the years 1969-71. Employment injuries, degree of disability and amount of compensation paid are reported by province for 1970 and 1971 in Table 8.27. In 1971, 818,780 injuries resulted in \$312.7 million in compensation compared with 811,644 injuries and \$304.5 million in compensation in 1970.

8.7 Organized labour

8.7.1 Union membership

At January 1, 1972, labour unions reported a total of 2.4 million members in Canada, an increase of 7.2% over 1971 (Table 8.28). Union membership comprised 34.4% of non-agricultural paid workers and 27.6% of the total civilian labour force in 1972. Membership, by type of union and affiliation, is presented in Table 8.29. Canadian Labour Congress (CLC) affiliates, with 1.7 million members in 1972, accounted for 72.8% of total union membership in Canada, compared with 74.8% in 1971. Of the total in CLC affiliates in 1972, 1.2 million members belonged to unions that were also affiliated with the American Federation of Labor and Congress of Industrial Organizations (AFL-CIO) in the United States; membership of unions affiliated with the CLC but not holding affiliation with the AFL-CIO totalled 529,559 or 22.3% of the total. Federations affiliated with the Quebec-based Confederation of National Trade Unions (CNTU) had 218,621 members or 9.2% of total union membership in Canada; the Canadian Council of Unions (CCU) represented 10,511 members or 0.5%; and the remaining 17.5% belonged to various unaffiliated international and national unions and independent local organizations.

International unions with headquarters in the United States accounted for 59.6% of the 1972 membership, compared with 62.0% in 1971; national and regional unions, which charter locals in Canada only, made up 37.7% (34.9% in 1971). Independent local organizations and local unions chartered by the CLC and the CNTU accounted for the remaining 2.7%.

In 1972, 20 unions reported membership of 30,000 or more. Ten unions reported 50,000 or more members, accounting for 39% of the total membership. The ten, listed with their affiliation, ranked as follows in 1972 (1971 rank in parentheses):

- 1 (1) United Steelworkers of America (AFL-CIO/CLC), 165,055
- 2 (2) Canadian Union of Public Employees (CLC), 157,919
- 3 (3) Public Service Alliance of Canada (CLC), 129,652
- 4 (4) International Union, United Automobile, Aerospace and Agricultural Implement Workers of America (CLC), 102,933
- 5 (5) United Brotherhood of Carpenters and Joiners of America (AFL-CIO/CLC), 74,362
- 6 (not included) Quebec Teachers' Corporation (Ind.), 70,000
- 7 (6) International Brotherhood of Teamsters, Chauffeurs, Warehousemen and Helpers of America (Ind.), 60,560
- 8 (8) Service Employees' National Federation, Inc. (CNTU), 56,603
- 9 (7) International Brotherhood of Electrical Workers (AFL-CIO/CLC), 56,026
- 10 (fewer than 50,000) International Woodworkers of America (AFL-CIO/CLC), 53,158.

8.7.2 Wages and collective agreements 1971

The Canada Department of Labour publishes wage settlements data for collective agreements on a quarterly basis. The agreements covered are limited to negotiating units of 500 or more employees in all industries, except construction. The base rate for a negotiating unit is defined as the lowest rate of pay, expressed in hourly terms, for the lowest paid classification used for qualified workers in the bargaining unit. In most cases, the base rate represents pay for an unskilled or semi-skilled classification of workers. However, this is not so in contracts covering only skilled and/or professional workers. The wage data, therefore, are not necessarily representative of the average increases enjoyed by the workers in the negotiating unit as a whole. Nevertheless, the data on numbers of agreements and workers refer to all occupational groups in the negotiating unit.

Wage rate data given in Tables 8.30 and 8.31 indicate that approximately 1.5 million workers were covered by 715 collective agreements at December 31, 1971. The average base rate rose 22.3 cents, or 8.1% during the 12-month period ended December 31, 1971, compared with an increase of 19.1 cents or 7.4% during the preceding 12-month period. On a year-over-year basis, the consumer price index rose by 5.0% during the 12-month period ended December 31, 1971, and by 1.5% during the preceding 12-month period. When the wage increases are deflated by the consumer price index increase, the average base rate increased, in real terms, 3.0% in 1971 and 5.8% in 1970.

Additional data are available from the Canada Department of Labour on wage settlements during quarterly periods, including number of agreements settled, number of employees covered and duration of contracts. The agreements covered are again limited to

negotiating units of 500 or more employees in all industries except construction. Details are not given here but, for 1971 as a whole, 333 contracts, affecting the wage rates of about 650,905 workers, were settled. On the average, the 333 settlements provided an annual percentage increase in base rate equal to 8.2% simple or 7.8% compound, over the term of the contracts. The comparable percentage for 1970 was 8.8% simple or 8.4% compound.

During 1971, settlements of one-year duration produced increases averaging 8.5%; those of two-year duration, 9.6% and 6.6% for the first and second years, respectively; and those of three-year duration, 9.4%, 6.8% and 5.6% for the first, second and third years of the contract. These increases compare with those of 1970 as follows: one-year agreements, average increases of 9.1%; two-year agreements, average increases of 10.0% and 7.4%; and three-year agreements, average increases of 10.2%, 7.0% and 4.4% for the first, second and third years, respectively, of the contract.

8.8 Strikes and lockouts

Statistical information on strikes and lockouts in Canada is compiled by the Economics and Research Branch of the Canada Department of Labour on the basis of reports from Canada Manpower Centres and provincial departments of labour. Table 8.32 presents a breakdown by industry of strikes and lockouts in 1971 involving five or more workers and continuing for ten or more man-days. The 547 work stoppages reported involved 239,631 workers and 2.9 million man-days.

The developments leading to work stoppages are often too complex to make it practicable to distinguish statistically between strikes on the one hand and lockouts on the other. However, a work stoppage that is clearly a lockout is not often encountered. The number of workers involved includes all workers reported on strike or locked out, whether or not they all belonged to the unions directly involved in the disputes leading to work stoppages. Workers indirectly affected, such as those laid off as a result of a work stoppage, are not included. Duration of strikes and lockouts in terms of man-days is calculated by multiplying the number of workers involved in each work stoppage by the number of working days the stoppage was in progress. The data on duration of work stoppages in man-days are provided to facilitate comparison of work stoppages in terms of a common denominator. They are not intended as a measure of the loss of productive time to the economy.

Sources

- 8.1.1 Public Relations Branch, Canada Department of Labour.
- 8.1.2 Information Service, Department of Manpower and Immigration.
- 8.1.3 Public Relations Branch, Canada Department of Labour; Annual Report, Canada Department of Labour.
- 8.2.1-8.2.2 Labour Force Survey Division, Household Statistics Branch, Statistics Canada. A comprehensive description of the survey is presented in Statistics Canada publication *Canadian labour force survey (methodology)* (Cat. No. 71-504).
- 8.3.1 Labour Division, General Statistics Branch, Statistics Canada. More detail is given in the Statistics Canada monthly publication *Employment, earnings and hours* (Cat. No. 72-002) and the annual publication *Review of employment and average weekly wages and salaries* (Cat. No. 72-201); for historical data, refer to Statistics Canada publication *Employment indexes, average weekly wages and salaries, average weekly hours and average hourly earnings, monthly and annual statistics, historical series, January 1961-May 1965* (Cat. No. 72-504).
- 8.3.2-8.3.4 Labour Division, General Statistics Branch, Statistics Canada. More detailed information on labour income is given in the Statistics Canada monthly publication *Estimates of labour income* (Cat. No. 72-005). Further information on labour costs is available in four Statistics Canada publications: *Labour costs in manufacturing, 1968* (Cat. No. 72-510); *Labour costs in Canada — mines, quarries and oil wells, 1969* (Cat. No. 72-511); *Labour costs in Canada — finance, insurance and real estate, 1970* (Cat. No. 72-610); *Labour costs in Canada — transportation, communication and other utilities, 1970* (Cat. No. 72-611).
- 8.3.5 Public Relations Branch, Canada Department of Labour.
- 8.4-8.5 Labour Division, General Statistics Branch, Statistics Canada. Further details on pension terms and conditions are published in Statistics Canada publications *Pension plans in Canada* (Cat. No. 74-401) and *Trusteed pension plans, financial statistics* (Cat. No. 74-201).
- 8.6-8.8 Public Relations Branch, Canada Department of Labour.

Tables

.. not available

... not appropriate or not applicable

— nil or zero

-- too small to be expressed

e estimate

p preliminary

r revised

certain tables may not add due to rounding

8.1 Estimates of the civilian labour force and its main components, annual averages 1963-72¹

Year	Civilian population (14 years of age and over) '000	Civilian labour force (14 years of age and over)				Persons not in the labour force (14 years of age and over) '000	Unemployment rate %	Participation rate %
		Employed	Other	Total	Unemployed			
		Paid workers '000	'000	'000	'000			
1963	12,536	5,241	1,134	6,375	374	6,748	5.5	53.8
1964	12,817	5,466	1,143	6,609	324	6,933	4.7	54.1
1965	13,128	5,760	1,102	6,862	280	7,141	3.9	54.4
1966	13,475	6,096	1,056	7,152	267	7,420	3.6	55.1
1967	13,874	6,305	1,074	7,379	315	7,694	4.1	55.5
1968	14,264	6,490	1,047	7,537	382	7,919	4.8	55.5
1969	14,638	6,720	1,060	7,780	382	8,162	4.7	55.8
1970	15,016	6,839	1,040	7,879	495	8,374	5.9	55.8
1971	15,388	7,029	1,050	8,079	552	8,631	6.4	56.1
1972	15,747	7,310	1,019	8,329	562	8,891	6.3	56.5

¹ Figures not adjusted for seasonality.

8.2 Distribution of population in the labour force and non-labour force categories, by age and sex, 1963-72¹

Sex, age and year	Population '000	Labour force			Not in labour force '000	Participation rate %	Unemployment rate %
		Employed	Unemployed	Total			
		'000	'000	'000			
Male							
14-24 years							
1963	1,569	801	104	906	664	57.7	11.5
1964	1,658	853	92	945	712	57.0	9.7
1965	1,746	922	76	998	748	57.2	7.6
1966	1,837	980	75	1,055	782	57.4	7.1
1967	1,931	1,027	90	1,117	815	57.8	8.1
1968	2,022	1,047	113	1,160	862	57.4	9.7
1969	2,107	1,088	113	1,201	906	57.0	9.4
1970	2,187	1,098	155	1,253	935	57.3	12.4
1971	2,259	1,131	173	1,304	955	57.7	13.3
1972	2,319	1,193	179	1,372	947	59.2	13.0
25+ years							
1963	4,646	3,766	207	3,973	673	85.5	5.2
1964	4,693	3,844	172	4,016	678	85.6	4.3
1965	4,759	3,919	148	4,067	692	85.5	3.6
1966	4,841	4,003	135	4,138	704	85.5	3.3
1967	4,945	4,057	155	4,212	732	85.2	3.7
1968	5,048	4,099	184	4,283	764	84.8	4.3
1969	5,148	4,184	175	4,359	789	84.7	4.0
1970	5,254	4,212	219	4,431	822	84.3	4.9
1971	5,363	4,261	235	4,496	867	83.8	5.2
1972	5,475	4,340	226	4,566	909	83.4	4.9
Female							
14-24 years							
1963	1,581	564	35	600	982	38.0	5.8
1964	1,656	599	34	633	1,023	38.2	5.4
1965	1,732	643	32	675	1,057	39.0	4.7
1966	1,811	710	32	742	1,069	41.0	4.3
1967	1,895	749	40	790	1,105	41.7	5.1
1968	1,975	788	50	838	1,136	42.5	6.0
1969	2,045	826	52	878	1,167	42.9	5.9
1970	2,113	825	69	894	1,219	42.3	7.7
1971	2,174	861	83	944	1,230	43.4	8.8
1972	2,228	902	85	987	1,241	44.3	8.6
25+ years							
1963	4,739	1,243	27	1,270	3,469	26.8	2.1
1964	4,810	1,312	27	1,339	3,471	27.8	2.0
1965	4,891	1,377	24	1,401	3,490	28.6	1.7
1966	4,985	1,459	26	1,485	3,501	29.8	1.8
1967	5,102	1,546	30	1,576	3,527	30.9	1.9
1968	5,219	1,603	35	1,638	3,582	31.4	2.1
1969	5,338	1,682	42	1,724	3,613	32.3	2.4
1970	5,462	1,744	52	1,796	3,666	32.9	2.9
1971	5,592	1,826	62	1,887	3,705	33.7	3.3
1972	5,724	1,894	72	1,966	3,758	34.3	3.7

¹ Figures not adjusted for seasonality.

8.3 Estimates of employment and unemployment by region, 1963-72¹ (thousands)

Year	Atlantic		Quebec		Ontario		Prairies		British Columbia	
	Em- plov- ment	Unem- plov- ment	Em- plov- ment	Unem- plov- ment	Em- plov- ment	Unem- plov- ment	Em- plov- ment	Unem- plov- ment	Em- plov- ment	Unem- plov- ment
1963	522	55	1,762	142	2,382	94	1,138	44	571	39
1964	542	46	1,827	124	2,473	83	1,162	37	605	34
1965	566	45	1,912	109	2,548	66	1,196	31	639	28
1966	586	40	2,016	100	2,651	69	1,222	26	678	32
1967	593	42	2,080	116	2,745	89	1,238	29	723	39
1968	596	47	2,082	145	2,830	104	1,280	39	750	47
1969	605	49	2,132	158	2,936	95	1,312	39	795	42
1970	609	50	2,144	183	2,996	134	1,320	61	810	67
1971	618	58	2,197	197	3,079	170	1,338	63	847	64
1972	635	63	2,225	201	3,218	162	1,372	64	879	72

¹ Figures not adjusted for seasonality.8.4 Percentage distribution of the employed by industrial group, 1963-72¹

Year	Total employed '000	Agri- culture %	Other primary indus- tries %	Manu- fac- turing %	Con- struc- tion %	Trans- porta- tion, commu- nication and other utilities %	Trade %	Finance, insurance and real estate %	Service ² %
1963	6,375	10.2	2.8	24.3	6.4	9.4	16.7	4.0	26.3
1964	6,609	9.5	3.0	25.0	6.2	8.9	16.7	4.0	26.7
1965	6,862	8.7	3.4	23.8	6.7	9.0	16.7	4.1	27.6
1966	7,152	7.6	3.1	24.4	7.0	8.7	16.5	4.2	28.5
1967	7,379	7.6	3.0	23.8	6.4	8.9	16.6	4.2	29.5
1968	7,537	7.2	2.9	23.3	6.2	8.9	16.7	4.3	30.4
1969	7,780	6.9	2.8	23.4	6.2	8.9	16.6	4.5	30.7
1970	7,879	6.5	2.8	22.7	6.0	8.8	16.8	4.6	31.9
1971	8,079	6.3	2.8	22.2	6.1	8.7	16.5	4.8	32.7
1972	8,329	5.8	2.6	22.3	6.0	8.8	16.9	4.6	33.0

¹ Figures not adjusted for seasonality.² Includes public administration and defence.8.5 Percentage distribution of the employed by major occupational group, 1963-72¹

Year	All occu- pations No.	Mana- gerial %	Profes- sional and tech- nical %	Cleri- cal %	Sales ² %	Service and recreation %	Trans- porta- tion %	Com- muni- cation %	Farm- ers and farm work- ers %	Fisher- men, trap- pers, loggers and miners %	Crafts- men, pro- duction process and related workers %	La- bours and un- skilled workers %
1963	6,375	9.2	10.6	13.4	7.2	11.1	5.6	0.9	10.3	1.9	24.9	4.8
1964	6,609	9.2	10.6	13.4	7.4	11.7	5.6	0.8	9.6	2.1	24.6	4.9
1965	6,862	9.3	11.4	13.4	7.0	11.6	5.4	0.9	8.7	2.2	25.2	4.9
1966	7,152	9.4	12.2	14.1	6.7	11.4	4.8	0.9	7.7	2.0	26.1	4.8
1967	7,379	9.4	12.4	14.1	6.8	11.8	4.7	0.9	7.6	1.9	26.1	4.3
1968	7,537	9.5	13.0	14.6	6.8	12.0	4.6	0.9	7.3	1.8	25.3	4.1
1969	7,780	9.6	13.3	14.8	6.8	12.0	4.5	0.8	6.9	1.6	25.5	4.1
1970	7,879	10.0	13.6	14.8	7.1	12.3	4.5	0.8	6.5	1.6	24.8	4.0
1971	8,079	9.8	14.1	15.1	7.1	12.3	4.5	0.9	6.3	1.5	24.1	4.3
1972	8,329	9.8	14.2	15.4	7.0	12.1	4.5	0.8	5.9	1.5	24.7	4.2

¹ Figures not adjusted for seasonality.² Includes commercial and financial occupations.8.6 Annual average index numbers¹ of employment, by industrial division, 1966-71, and monthly indexes 1971 and 1972

Year and month	For- estry	Mining (incl. milling)	Manu- factur- ing	Con- struc- tion	Trans- porta- tion, commu- nication and other utilities	Trade	Finance, insur- ance and real estate	Service ²	Indus- trial com- posite
Averages									
1966	106.2	107.0	123.5	128.9	107.5	122.0	120.5	139.1	120.7
1967	102.3	109.0	123.2	122.5	111.0	125.8	126.0	153.4	122.6
1968	91.1	109.8	122.1	119.4	109.5	129.4	131.4	157.8	122.7
1969	88.7	107.9	125.2	119.1	111.9	136.6	138.8	171.8	126.9
1970	84.2	115.7	122.8	113.9	112.6	139.3	143.6	178.5	127.1
1971P	79.5	114.9	121.6	115.5	114.5	140.3	145.9	186.5	127.8

8.6 Annual average index numbers¹ of employment, by industrial division, 1966-71, and monthly indexes 1971 and 1972 (concluded)

Year and month	Forestry	Mining (incl. milling)	Manufacturing	Construction	Transportation, communication and other utilities	Trade	Finance, insurance and real estate	Service ²	Industrial composite
1971 ^p									
January	67.7	114.4	119.1	96.4	110.8	136.3	143.7	174.6	123.0
February	65.0	113.7	118.5	97.7	110.9	134.2	144.7	172.7	122.4
March	58.5	113.8	118.9	101.5	109.9	135.6	145.7	178.8	123.5
April	52.9	110.9	119.5	108.3	111.9	137.7	145.5	182.3	124.5
May	75.3	115.7	122.6	120.0	114.8	139.9	146.4	188.3	128.5
June	94.1	120.1	124.6	129.0	117.8	141.1	147.5	195.2	131.7
July	99.4	120.4	120.7	131.2	118.2	137.9	148.1	197.0	130.1
August	98.3	120.1	125.3	130.3	119.0	138.4	146.8	200.2	132.3
September	96.9	115.4	125.0	129.2	117.3	142.0	146.4	194.0	131.7
October	91.2	112.7	123.5	127.0	115.9	144.1	145.3	189.1	130.4
November	82.5	111.8	122.4	117.9	115.1	147.9	145.5	185.3	129.4
December	70.5	109.1	119.5	97.5	113.8	148.4	145.2	179.8	126.0
1972 ^p									
January	62.9	109.6	119.4	95.3	112.4	141.0	144.9	181.3	124.3
February	63.9	109.1	119.9	95.0	112.3	139.7	146.2	185.2	124.6
March	58.4	110.7	121.2	96.6	113.1	142.4	147.3	186.2	126.0
April	51.3	109.2	122.1	102.5	113.9	143.8	147.6	190.3	127.2
May	71.6	111.8	124.6	110.4	115.6	145.9	148.5	195.6	130.3
June	76.1	111.3	125.1	119.4	118.7	146.4	150.0	201.5	132.3
July	88.5	109.8	123.6	122.1	118.6	142.4	150.6	202.2	131.4

¹ Indexes are calculated as at the last pay period of each month (1961=100).

² Consists mainly of hotels, restaurants, laundries, dry-cleaning establishments and recreational and business services.

8.7 Annual average index numbers¹ of employment, by industrial division and group, 1967-71

Industry	1967	1968	1969	1970	1971 ^p
FORESTRY	102.3	91.1	88.7	84.2	79.5
MINING (incl. milling)	109.0	109.8	107.9	115.7	114.9
Metals	105.0	103.8	97.4	106.9	100.1
Gold	62.7	56.4	51.1	45.4	34.5
Copper-gold-silver	125.8	120.5	121.3	125.4	123.5
Iron	135.9	134.1	122.6	135.1	132.5
Mineral fuels	103.6	103.4	102.6	108.9	112.7
Coal	83.5	78.2	69.6	74.0	77.9
Petroleum and gas wells	123.8	129.0	136.4	144.0	146.8
Non-metals (except fuels)	113.9	117.3	126.3	136.3	135.6
Asbestos	103.5	109.3	110.9	118.0	120.5
MANUFACTURING	123.2	122.1	125.2	122.8	121.6
Durable goods	133.9	131.7	136.7	132.8	131.4
Non-durable goods	114.5	114.4	115.9	114.7	113.7
Foods and beverages	110.4	110.2	109.1	109.1	108.6
Slaughtering and meat processing	104.4	105.1	102.1	102.4	105.8
Dairy products	106.4	105.6	101.6	102.9	100.2
Fish products	121.7	131.3	129.7	128.8	134.3
Fruit and vegetable processing	120.9	120.8	118.4	115.8	112.5
Grain mill products	103.5	103.4	102.7	107.1	105.6
Biscuits	108.1	104.9	106.0	103.7	100.4
Bakeries	99.7	96.0	95.9	94.0	91.1
Confectionery	115.9	110.3	107.2	103.8	101.9
Soft drinks	124.6	125.4	122.5	119.6	115.3
Distilleries	115.7	113.3	117.5	115.4	113.4
Breweries	98.9	97.3	97.8	99.6	105.0
Tobacco processing and products	105.1	101.2	97.8	95.4	94.6
Rubber products	122.0	120.0	123.7	112.2	111.7
Leather products	98.7	100.3	99.2	91.2	91.5
Shoes (except rubber)	94.4	94.9	94.3	86.0	87.6
Luggage, handbags and small leather goods	123.8	127.6	123.6	113.2	111.1
Textile products	119.9	117.8	119.8	113.7	114.8
Cotton yarn and cloth	100.2	89.7	86.9	78.2	76.5
Woollen yarn and cloth	97.3	90.6	89.9	88.0	83.7
Synthetic textiles	136.0	131.0	136.3	126.4	122.8
Knitting mills	110.5	113.7	117.3	112.5	112.2
Hosiery	98.1	108.1	113.1	106.0	95.6
Other knitting mills	117.7	117.3	120.2	116.7	122.2
Clothing	110.9	109.2	109.2	109.2	103.4
Men's clothing	116.5	113.6	114.5	119.3	119.7
Women's clothing	114.9	113.2	115.5	112.3	112.0
Wood products	108.3	108.4	113.0	108.1	115.9
Saw, shingle and planing mills	103.9	105.4	111.7	108.8	117.3
Furniture and fixtures	128.6	126.8	134.0	127.6	129.6
Household furniture	131.8	130.9	138.7	129.7	132.1
Paper and allied industries	118.4	117.6	121.7	121.1	119.4
Pulp and paper mills	115.0	112.7	116.3	116.3	115.4
Printing, publishing and allied industries	113.6	114.4	115.5	116.6	113.4
Commercial printing	114.3	116.9	117.8	118.9	116.1
Printing and publishing	110.6	109.6	110.8	111.3	108.4

8.7 Annual average index numbers¹ of employment, by industrial division and group, 1967-71 (concluded)

Industry	1967	1968	1969	1970	1971 ^p
MANUFACTURING (concluded)					
Primary metal industries	124.4	125.6	123.2	130.5	128.9
Iron and steel mills	129.5	130.7	126.1	137.6	137.0
Iron foundries	139.9	144.5	153.2	143.5	130.0
Smelting and refining	114.8	113.2	107.3	119.7	118.9
Metal fabricating industries	133.6	130.1	135.7	133.9	130.9
Fabricated structural metals	120.5	108.6	117.1	122.8	112.4
Ornamental and architectural metals	123.5	119.0	125.3	122.4	121.4
Metal stamping, pressing and coating	138.1	138.3	144.6	138.2	138.5
Wire and wire products	134.7	135.4	138.6	136.0	133.7
Hardware, tools and cutlery	148.4	150.0	160.8	163.0	156.8
Heating equipment	109.4	104.5	106.6	103.0	96.7
Miscellaneous metal fabricating	134.5	130.5	130.1	127.8	127.9
Machinery (except electrical)	149.7	141.0	151.4	149.5	143.6
Agricultural implements	141.0	109.7	119.2	95.5	86.6
Miscellaneous machinery and equipment	150.8	143.4	152.5	153.2	146.0
Office and store machinery	162.2	172.8	191.2	207.9	210.8
Transportation equipment	151.8	147.6	155.6	141.7	144.3
Aircraft and parts	129.1	123.0	117.3	104.8	80.5
Motor vehicles	168.0	169.3	183.9	166.6	186.8
Assembling	166.2	170.0	181.6	160.9	175.9
Parts and accessories	168.7	166.8	180.5	162.7	184.7
Shipbuilding and repair	128.8	108.4	107.6	92.5	93.3
Electrical products	144.2	143.6	150.4	144.3	134.1
Major appliances (incl. non-electrical)	119.7	120.0	125.5	106.5	103.1
Household radios and televisions	127.9	119.9	130.4	124.9	121.4
Communications equipment	167.7	177.6	180.0	171.7	155.8
Non-metallic mineral products	119.2	116.8	119.3	115.3	113.6
Concrete products	122.2	115.8	124.4	123.7	135.9
Clay products	108.5	108.1	111.3	105.8	100.3
Glass and glass products	125.2	128.9	129.2	127.1	118.8
Petroleum and coal products	102.7	104.0	104.0	105.9	105.6
Petroleum refineries	94.0	94.4	92.2	93.8	91.9
Chemicals and chemical products	118.8	118.7	120.4	120.5	126.9
Pharmaceuticals and medicines	131.2	133.4	137.9	143.3	148.6
Paints and varnishes	108.0	106.4	109.6	108.9	108.3
Soap and cleaning compounds	101.8	102.5	102.3	98.8	96.0
Industrial chemicals	118.3	115.7	117.9	119.8	112.5
Miscellaneous manufacturing industries	133.0	137.8	149.4	151.8	151.9
CONSTRUCTION					
Building	122.5	119.4	119.1	113.9	115.5
General contractors	127.8	127.2	130.3	124.9	125.2
Special trade contractors	115.2	111.2	110.7	103.6	104.1
Engineering	141.5	144.2	151.1	147.6	147.7
Highways, bridges and streets	113.3	106.0	99.8	95.0	98.8
Other engineering	97.0	90.2	84.0	81.0	82.0
	134.2	127.0	120.1	113.0	120.3
TRANSPORTATION, COMMUNICATION AND OTHER UTILITIES					
Transportation	111.0	109.5	111.9	112.6	114.5
Air transport and services	107.8	105.8	107.3	106.9	107.4
Water transport and services	136.0	143.7	145.2	161.2	158.2
Railway transport	102.9	99.8	101.2	100.7	99.4
Truck transport	96.6	88.4	86.3	84.2	83.9
Bus transport, interurban and rural	129.4	133.6	138.7	135.0	137.1
Urban transit	115.6	113.4	123.2	129.1	135.7
Highway and bridge maintenance	112.9	115.6	113.8	114.3	114.1
Storage	108.1	111.3	116.6	113.0	116.0
Grain elevators	114.8	111.4	110.1	110.3	110.1
Other storage and warehousing	110.7	107.4	102.5	102.4	103.5
Communication	126.0	122.6	131.4	131.9	127.8
Radio and television broadcasting	118.8	116.3	121.3	125.7	130.4
Telephone	124.0	128.1	132.7	133.5	136.4
Telegraph and cable	122.2	118.2	119.0	123.0	125.7
Post office	93.0	86.5	81.5	80.5	78.7
	118.1	116.6	132.8	141.3	153.1
ELECTRIC POWER, GAS AND WATER					
Electric power	113.1	116.3	119.0	120.4	124.4
Gas distribution	115.0	118.3	121.6	124.6	128.9
	102.5	105.2	107.6	103.7	102.9
TRADE					
Wholesale	125.8	129.4	136.6	139.3	140.3
Retail	121.1	122.5	129.0	132.8	132.8
Food stores	128.4	133.2	140.7	142.8	144.3
Department stores	133.0	140.3	148.4	151.6	144.1
Variety stores	128.6	131.6	136.9	135.6	139.9
Automotive product stores	119.5	124.7	132.5	132.6	132.2
	134.8	141.5	148.3	149.2	155.7
FINANCE, INSURANCE AND REAL ESTATE					
Financial institutions	126.0	131.4	138.8	143.6	145.9
Insurance and real estate	128.7	134.3	143.5	148.2	148.5
Insurance carriers	122.3	127.4	132.4	137.5	141.5
	119.3	122.4	124.7	126.6	126.8
SERVICE					
Recreational services	153.4	157.8	171.8	178.5	186.5
Business services	135.4	144.3	158.4	161.3	167.9
Personal services	167.4	173.1	189.5	194.8	207.8
Miscellaneous services	141.4	145.7	157.2	162.3	167.9
Industrial composite	188.3	187.6	206.7	223.5	233.3
	122.6	122.7	126.9	127.1	127.8

¹ Indexes refer to the last week of each month (1961=100).

8.8 Annual average index numbers¹ of employment, by province, 1967-71, and monthly indexes 1971 and 1972

Year and month	Nfld.	PEI	NS	NB	Que.	Ont.	Man.	Sask.	Alta.	BC	Canada
Averages											
1967	121.7	124.9	113.3	116.5	119.4	125.1	115.0	119.5	126.2	128.7	122.6
1968	119.3	131.9	114.3	116.5	117.7	126.1	115.6	119.5	128.7	128.8	122.7
1969	120.7	130.6	117.8	119.1	119.9	131.0	118.0	118.1	136.7	137.5	126.9
1970	121.8	134.0	114.3	119.2	119.3	131.6	117.7	113.2	138.2	139.3	127.1
1971P	125.9	139.5	113.7	122.9	118.7	132.1	117.2	114.4	139.7	144.5	127.8
1971P											
January	112.5	122.3	108.8	113.2	115.3	128.6	113.8	107.7	132.1	133.6	123.0
February	111.6	125.7	107.6	112.5	114.9	128.3	111.8	108.4	130.8	135.6	122.4
March	114.3	123.1	106.9	112.7	114.1	128.7	113.8	109.2	133.4	138.3	123.5
April	116.2	127.2	110.5	112.3	115.0	130.5	113.9	111.2	133.3	140.8	124.5
May	128.1	141.4	115.5	124.5	119.0	133.3	116.9	115.6	139.8	144.4	128.5
June	139.4	148.8	117.4	134.3	121.8	135.6	121.5	120.5	143.9	147.9	131.7
July	137.9	154.8	118.7	135.2	120.0	132.0	120.5	121.3	146.3	151.0	130.1
August	137.9	154.1	118.1	133.6	123.0	134.6	120.8	121.2	148.3	152.6	132.3
September	135.6	152.1	117.7	129.6	122.4	134.8	120.5	117.2	146.3	151.3	131.7
October	132.9	147.5	116.8	126.2	122.1	133.6	118.7	115.0	143.3	149.2	130.4
November	126.8	142.2	114.8	122.9	120.6	133.7	118.3	114.1	140.8	146.8	129.4
December	117.1	134.2	112.1	117.2	116.5	131.1	115.4	111.4	137.3	142.9	126.0
1972P											
January	114.4	125.7	109.0	114.4	114.9	129.6	113.6	109.5	135.7	141.5	124.3
February	111.0	121.2	108.9	112.6	115.3	129.4	113.8	110.8	137.9	144.1	124.6
March	111.4	121.8	110.8	112.6	116.3	130.4	114.8	111.8	139.5	147.9	126.0
April	114.1	127.7	111.8	113.6	117.2	132.1	115.8	113.5	139.0	148.6	127.2
May	127.3	140.5	117.8	122.0	119.7	135.3	119.2	118.9	143.9	146.3	130.3
June	134.3	151.7	125.0	130.8	122.5	137.2	120.6	120.3	148.2	140.6	132.3
July	134.2	159.1	123.6	132.2	121.1	133.8	119.7	121.8	149.0	151.5	131.4

¹ Indexes refer to the last week of each month (1961=100).**8.9 Annual average index numbers¹ of employment, by metropolitan area, 1967-71, and monthly indexes 1971 and 1972**

Year and month	Montreal	Quebec	Toronto	Ottawa-Hull	Hamilton	Windsor	Winnipeg	Vancouver
Averages								
1967	122.6	116.3	126.0	123.5	120.8	148.2	117.3	127.7
1968	121.0	114.6	128.2	128.6	119.8	149.6	116.9	129.6
1969	122.7	118.1	134.3	137.7	121.2	152.7	121.2	140.0
1970	121.4	123.3	135.1	140.6	124.0	149.9	121.2	141.1
1971P	120.2	129.4	135.5	143.1	123.7	150.0	120.1	144.8
1971P								
January	118.0	121.1	132.1	137.3	122.4	149.9	121.8	135.6
February	117.8	122.4	132.2	138.5	121.1	147.8	116.3	137.0
March	118.0	123.3	133.3	138.7	122.4	148.4	118.0	139.1
April	118.7	125.7	134.6	139.6	123.4	150.5	118.7	141.2
May	121.7	129.7	136.8	142.1	125.4	152.6	120.5	144.3
June	122.9	133.9	139.6	146.7	124.1	154.4	124.0	147.2
July	118.4	132.1	135.1	144.7	123.8	140.2	121.6	148.5
August	122.3	134.3	136.1	146.2	124.1	152.7	121.4	149.4
September	122.7	131.9	137.3	146.2	124.9	152.2	121.5	150.1
October	122.5	134.2	136.9	146.8	123.5	150.3	121.0	149.6
November	121.3	134.0	137.2	146.2	125.8	151.7	121.8	149.2
December	117.6	130.2	135.0	144.5	122.9	149.5	119.1	146.7
1972P								
January	116.9	128.3	134.1	142.0	119.5	146.7	117.1	146.0
February	117.7	127.7	134.2	141.2	118.5	147.9	117.1	148.2
March	118.8	129.0	135.1	142.9	120.0	149.4	117.7	151.5
April	120.1	130.8	136.6	143.9	121.7	152.1	119.1	150.9
May	120.7	131.8	140.0	149.0	122.0	153.9	121.9	146.1
June	122.8	135.2	141.9	150.0	127.4	157.4	122.2	143.1
July	120.0	133.5	138.5	149.4	126.0	152.6	119.8	151.6

¹ Indexes refer to the last week of each month (1961=100).

8.10 Annual index numbers of employment and average weekly earnings, by industry, province and urban area, 1969-71

Industry, province and urban area	Employment (1961 = 100)			Average weekly wages and salaries (dollars)		
	1969	1970	1971P	1969	1970	1971P
INDUSTRY						
Forestry	88.7	84.2	79.5	133.60	137.60	155.46
Mining (incl. milling)	107.9	115.7	114.9	148.93	164.70	176.97
Manufacturing	125.2	122.8	121.6	122.97	132.75	143.99
Durable goods ¹	136.7	132.8	131.4	132.13	142.87	155.33
Non-durable goods ¹	115.9	114.7	113.7	114.21	123.27	133.25
Construction	119.1	113.9	115.5	150.68	167.15	188.26
Transportation, communication and other utilities	111.9	112.6	114.5	131.03	142.35	154.04
Trade	136.6	139.3	140.3	93.81	100.50	108.48
Finance, insurance and real estate	138.8	143.6	145.9	113.83	120.52	129.59
Service	171.8	178.5	186.5	84.23	90.65	98.63
Industrial composite	126.9	127.1	127.8	117.64	126.82	137.65
PROVINCE						
Newfoundland	120.7	121.8	125.9	106.00	117.70	123.79
Prince Edward Island	130.6	134.0	139.5	80.87	83.82	89.97
Nova Scotia	117.8	114.3	113.7	94.51	104.21	112.78
New Brunswick	119.1	119.2	122.9	96.80	104.01	113.36
Quebec	119.9	119.3	118.7	114.24	122.38	132.02
Ontario	131.0	131.6	132.1	121.56	131.52	143.02
Manitoba	118.0	117.7	117.2	107.67	115.88	123.84
Saskatchewan	118.1	113.2	114.4	107.90	114.87	121.71
Alberta	136.7	138.2	139.7	117.95	128.15	138.77
British Columbia	137.5	139.3	144.5	129.35	137.97	152.50
URBAN AREA						
Corner Brook, Nfld.	100.9	104.8	100.3	116.94	125.77	130.70
St. John's, Nfld.	136.2	134.9	141.4	92.44	100.20	109.67
Halifax, NS	121.9	120.8	120.5	98.12	105.77	115.95
Sydney, NS	93.3	90.7	90.6	101.44	111.62	119.83
Moncton, NB	129.0	136.8	142.6	93.34	98.79	108.66
Saint John, NB	114.6	113.9	119.1	97.97	105.50	119.70
Chicoutimi, Que.	112.0	113.6	113.4	133.62	143.12	150.59
Drummondville, Que.	120.1	117.2	121.1	93.55	100.52	110.44
Granby, Que.	109.3	106.9	109.4	93.69	101.64	109.04
Montreal, Que.	122.7	121.4	120.2	116.71	125.45	135.58
Ottawa, Ont.-Hull, Que.	137.7	140.6	143.1	110.36	119.17	130.14
Quebec, Que.	118.1	123.3	129.4	100.49	109.84	122.14
Rouyn-Noranda, Que.	104.3	107.3	100.1	113.95	124.91	130.30
St. Hyacinthe, Que.	122.7	124.0	124.3	88.72	96.25	105.34
Saint-Jean, Que.	127.4	123.0	128.8	98.78	105.96	115.74
St. Jérôme, Que.	114.7	114.2	121.3	94.91	103.61	116.27
Shawinigan, Que.	94.4	95.3	86.4	118.91	126.79	135.01
Sherbrooke, Que.	117.2	119.9	111.6	99.16	107.49	116.53
Sorel, Que.	155.7	157.9	154.6	127.99	143.91	151.03
Thetford Mines, Que.	119.9	120.8	123.0	119.55	130.63	139.21
Trois-Rivières, Que.	114.9	112.4	110.8	108.27	117.25	127.45
Valleyfield, Que.	131.0	129.1	127.6	121.13	129.81	136.15
Belleville, Ont.	124.8	127.0	128.9	102.97	110.54	121.41
Brampton, Ont.	280.1	289.3	291.6	120.09	128.93	140.63
Brantford, Ont.	137.7	130.8	124.8	110.57	117.18	128.74
Brockville, Ont.	128.1	129.9	129.3	114.81	124.19	133.68
Chatham, Ont.	139.4	138.8	143.2	119.89	129.12	141.90
Cornwall, Ont.	138.5	127.5	125.7	111.70	119.89	128.05
Guelph, Ont.	141.9	141.2	136.6	101.65	120.93	131.12
Hamilton, Ont.	121.2	124.0	123.7	123.06	135.49	147.65
Kingston, Ont.	128.3	125.6	122.6	115.28	121.24	132.28
Kitchener, Ont.	154.9	153.6	155.6	108.41	116.13	127.46
London, Ont.	125.2	124.4	123.8	113.27	121.41	132.56
Niagara Falls, Ont.	112.5	116.1	115.3	112.52	120.45	130.09
North Bay, Ont.	116.0	119.4	119.8	115.53	126.84	137.72
Oshawa, Ont.	140.8	121.9	131.2	136.70	145.56	164.65
Peterborough, Ont.	141.5	142.1	136.4	122.77	131.17	144.23
St. Catharines, Ont.	143.2	133.2	137.6	132.55	139.88	157.23
St. Thomas, Ont.	207.5	198.2	200.7	128.50	141.15	146.49
Sarnia, Ont.	143.0	135.9	127.7	153.69	161.99	170.81
Sault Ste. Marie, Ont.	111.3	124.0	123.7	130.77	149.19	160.85
Stratford, Ont.	150.5	147.8	153.0	104.26	110.95	121.02
Sudbury, Ont.	103.2	131.9	136.5	140.11	159.21	165.38
Thunder Bay, Ont.	124.2	125.6	135.5	117.02	124.69	141.58
Timmins, Ont.	72.4	72.0	77.2	106.32	116.59	133.24
Toronto, Ont.	134.3	135.1	135.5	123.09	133.67	144.96
Wellsand, Ont.	108.1	115.6	113.0	138.41	149.01	161.75
Windsor, Ont.	152.7	149.9	150.0	137.28	150.80	163.30
Woodstock, Ont.	158.4	150.1	149.7	110.68	117.65	129.07
Winnipeg, Man.	121.2	121.2	120.1	100.80	108.84	116.89
Regina, Sask.	123.0	118.5	123.7	103.55	110.64	117.53
Saskatoon, Sask.	140.9	132.6	129.5	101.38	109.12	113.92
Calgary, Alta.	147.3	147.2	149.7	117.10	126.73	137.36
Edmonton, Alta.	145.1	145.7	144.6	111.98	121.80	130.42
Vancouver, BC	140.0	141.1	144.8	125.21	133.90	148.86
Victoria, BC	133.6	131.0	128.8	112.06	117.30	128.39

¹ Durable goods manufacturing includes wood products, furniture and fixtures, primary metal industries, metal fabricating industries, machinery (except electrical), transportation equipment, electrical products and non-metallic mineral products; non-durable goods manufacturing includes all other manufacturing industries.

8.11 Annual average weekly earnings, by industrial division, 1967-71, and monthly averages 1971 and 1972 (dollars)

Year and month	Forestry	Mining (incl. milling)	Manufacturing	Construction	Transportation, communication and other utilities	Trade	Finance, insurance and real estate	Service ¹	Industrial composite
Averages									
1967	113.64	129.13	106.53	130.83	113.15	81.24	99.02	74.98	102.76
1968	122.04	139.16	114.42	137.59	122.70	86.91	106.21	78.99	109.88
1969	133.60	148.93	122.97	150.68	131.03	93.81	113.83	84.23	117.64
1970	137.60	164.70	132.75	167.15	142.35	100.50	120.52	90.65	126.82
1971 ^D	155.46	176.97	143.99	188.26	154.04	108.48	129.59	98.63	137.65
1971 ^D									
January	143.55	170.47	138.06	172.04	145.62	103.21	125.29	94.65	130.83
February	147.87	172.73	139.75	179.09	149.12	102.59	124.84	94.37	132.50
March	156.73	177.34	141.58	186.31	148.13	105.55	130.39	96.99	134.75
April	163.15	177.15	142.30	187.55	148.79	107.12	131.14	97.64	135.69
May	149.42	176.01	142.65	180.68	151.07	107.61	128.85	98.03	135.93
June	151.70	176.07	144.45	187.82	153.00	109.59	129.84	98.35	138.06
July	150.68	172.02	143.37	192.43	155.63	111.49	130.62	99.51	138.72
August	148.16	174.31	144.07	193.93	157.50	110.24	129.54	98.81	139.11
September	160.92	180.23	146.78	200.96	158.05	110.01	129.49	99.32	140.99
October	166.03	181.53	148.28	201.98	159.96	110.64	130.74	100.30	142.20
November	169.10	183.39	148.88	199.64	160.30	110.21	130.63	101.63	142.06
December	159.06	182.70	147.69	176.84	162.46	113.07	133.73	103.08	140.90
1972 ^D									
January	165.90	183.01	151.34	198.03	162.47	112.78	135.36	103.14	143.68
February	175.00	186.66	151.51	203.34	163.94	113.55	136.68	103.16	144.64
March	173.50	187.28	152.74	201.13	165.59	114.62	139.82	105.27	145.88
April	178.79	187.00	155.29	211.38	166.06	115.96	139.73	105.05	147.76
May	161.62	186.60	154.19	203.40	166.59	116.91	139.75	106.16	147.33
June	154.77	186.98	155.96	206.59	167.59	119.35	141.80	105.84	149.03
July	164.47	186.27	154.69	211.21	168.68	120.55	141.44	107.80	149.66

¹ Mainly hotels, restaurants, laundries, dry-cleaning establishments and recreational and business services.

8.12 Annual average weekly hours and hourly earnings of hourly rated wage-earners in specified industries, 1966-71, and monthly averages 1971 and 1972

Year and month	All manufacturing		Mining (incl. milling)		Construction	
	Average weekly hours	Average hourly earnings \$	Average weekly hours	Average hourly earnings \$	Average weekly hours	Average hourly earnings \$
Averages						
1966	40.8	2.25	42.2	2.60	42.2	2.80
1967	40.3	2.40	41.9	2.84	41.3	3.12
1968	40.3	2.58	41.8	3.07	40.5	3.33
1969	40.0	2.79	41.4	3.28	39.8	3.71
1970	39.7	3.01	41.0	3.71	39.2	4.21
1971 ^D	39.7	3.28	40.4	4.04	39.2	4.75
1971 ^D						
January	38.9	3.19	39.9	3.92	36.9	4.58
February	39.0	3.21	40.6	3.91	38.0	4.65
March	39.9	3.21	41.1	4.00	39.5	4.69
April	39.8	3.23	40.9	3.99	39.2	4.73
May	39.5	3.27	40.5	4.01	37.9	4.68
June	39.9	3.29	40.6	4.02	39.6	4.71
July	39.4	3.27	39.1	4.02	40.9	4.70
August	39.8	3.28	39.9	4.00	41.5	4.67
September	40.3	3.32	40.8	4.09	41.6	4.83
October	40.3	3.35	40.6	4.12	41.4	4.88
November	40.3	3.36	40.9	4.16	40.2	4.94
December	38.8	3.41	40.0	4.21	33.8	4.97
1972 ^D						
January	39.8	3.42	40.1	4.17	38.5	5.03
February	39.7	3.43	40.8	4.20	39.6	5.04
March	39.9	3.46	40.7	4.23	38.6	5.09
April	40.3	3.50	40.3	4.21	40.9	5.11
May	39.8	3.51	40.1	4.26	39.9	5.00
June	40.2	3.51	40.3	4.23	40.9	4.96
July	39.5	3.53	39.5	4.30	41.6	5.05

8.13 Average weekly hours and hourly earnings of hourly rated wage-earners in specified industries and selected urban areas, 1969-71

Industry, province and urban area	Average weekly hours			Average hourly earnings (\$)		
	1969	1970	1971 ^p	1969	1970	1971 ^p
INDUSTRY						
Mining (incl. milling)	41.4	41.0	40.4	3.28	3.71	4.04
Metal mining	40.7	40.3	39.3	3.38	3.84	4.17
Coal mining	41.9	42.1	41.1	2.59	3.09	3.51
Manufacturing	40.0	39.7	39.7	2.79	3.01	3.28
Durable goods ¹	40.6	40.2	40.1	3.00	3.25	3.55
Non-durable goods ¹	39.5	39.3	39.2	2.57	2.77	3.02
Construction	39.8	39.2	39.2	3.71	4.21	4.75
Building	38.0	37.5	37.4	3.82	4.36	4.90
Engineering	44.0	43.1	43.1	3.48	3.92	4.44
Other						
Urban transit	41.7	42.0	41.9	3.43	3.65	4.02
Highway and bridge maintenance	36.2	37.2	36.7	2.49	2.70	2.94
Hotels, restaurants and taverns	32.3	31.0	31.5	1.62	1.75	1.95
Laundries, cleaners and pressers	37.4	37.0	36.8	1.62	1.74	1.91
PROVINCE						
Manufacturing						
Newfoundland	41.6	40.5	40.0	2.25	2.53	2.72
Nova Scotia	39.8	39.2	39.2	2.20	2.45	2.67
New Brunswick	40.3	40.5	40.1	2.29	2.47	2.71
Quebec	40.8	40.4	40.3	2.50	2.68	2.89
Ontario	40.1	39.8	39.8	2.93	3.18	3.47
Manitoba	39.4	38.9	38.5	2.47	2.72	2.91
Saskatchewan	39.7	39.5	39.2	2.94	3.16	3.44
Alberta	39.4	39.1	39.2	2.90	3.18	3.47
British Columbia	37.4	36.8	37.2	3.48	3.71	4.12
SELECTED URBAN AREA						
Manufacturing						
Montreal	40.2	39.9	39.9	2.56	2.73	2.93
Toronto	40.3	39.9	40.1	2.84	3.06	3.30
Hamilton	39.7	39.4	39.2	3.17	3.51	3.80
Windsor	40.6	41.8	40.8	3.56	3.87	4.30
Winnipeg	39.1	38.8	38.3	2.45	2.70	2.89
Vancouver	37.2	36.5	37.2	3.40	3.64	4.00

¹ Durable goods manufacturing includes wood products, furniture and fixtures, primary metal industries, metal fabricating industries, machinery (except electrical), transportation equipment, electrical products and non-metallic mineral products; non-durable goods manufacturing includes all other manufacturing industries.

8.14 Percentage distribution of employees in retail trade, by employee status and by province, September 1970

Province	Full-time employees	Part-time and casual employees	Head office employees ¹
Newfoundland	78.6	18.7	2.7
Prince Edward Island	78.0	21.6	0.4
Nova Scotia	75.3	22.7	2.0
New Brunswick	71.9	27.6	0.5
Quebec	76.4	19.5	4.1
Ontario	67.8	28.8	3.4
Manitoba	62.6	33.4	4.0
Saskatchewan	74.2	24.8	1.0
Alberta	67.9	30.7	1.4
British Columbia	66.7	31.9	1.4
Canada ²	70.1	26.9	3.0

¹ Includes all employee status categories.

² Includes Yukon Territory and Northwest Territories.

8.15 Average earnings and hours of work of employees in retail trade by employee status, sex and province, 1970

Province and employee status	Average weekly earnings (\$)			Average hourly earnings (\$)			Average weekly hours		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
NEWFOUNDLAND									
Full-time	98.23	58.04	83.13	2.38	1.44	2.03	41.2	40.1	40.8
Part-time and casual	28.31	27.90	28.04	1.30	1.29	1.29	21.7	21.6	21.6
All employees ¹	91.71	49.87	73.57	2.34	1.43	1.98	39.0	34.7	37.1
PRINCE EDWARD ISLAND									
Full-time	88.54	56.34	75.03	2.05	1.45	1.81	43.1	38.7	41.3
Part-time and casual	30.14	27.26	28.28	1.35	1.23	1.27	22.2	22.1	22.1
All employees ¹	80.34	47.86	65.09	2.00	1.41	1.75	40.1	33.8	37.1
NOVA SCOTIA									
Full-time	100.74	66.99	86.50	2.42	1.71	2.13	41.6	39.1	40.5
Part-time and casual	33.31	28.57	30.54	1.39	1.36	1.37	23.8	21.0	22.2
All employees ¹	90.65	55.98	74.76	2.35	1.65	2.05	38.4	33.8	36.3
NEW BRUNSWICK									
Full-time	97.66	67.95	85.49	2.26	1.71	2.05	43.0	39.5	41.6
Part-time and casual	29.61	29.38	29.46	1.39	1.43	1.42	21.2	20.5	20.7
All employees ¹	86.06	53.15	70.19	2.19	1.65	1.95	39.2	32.2	35.8

8.15 Average earnings and hours of work of employees in retail trade by employee status, sex and province, 1970 (concluded)

Province and employee status	Average weekly earnings (\$)			Average hourly earnings (\$)			Average weekly hours		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
QUEBEC									
Full-time	111.79	73.09	96.27	2.73	1.97	2.44	40.9	37.0	39.3
Part-time and casual	31.95	29.52	30.45	1.74	1.63	1.67	18.3	18.1	18.2
All employees ¹	102.40	62.88	84.74	2.71	1.96	2.41	37.7	31.9	35.1
ONTARIO									
Full-time	124.96	78.21	104.53	3.08	2.09	2.67	40.5	37.3	39.1
Part-time and casual	32.96	33.52	33.30	1.78	1.66	1.70	18.4	20.1	19.5
All employees ¹	107.39	62.55	85.55	3.01	2.01	2.56	35.6	31.0	33.4
MANITOBA									
Full-time	115.78	75.82	99.13	2.81	1.79	2.38	41.1	42.3	41.6
Part-time and casual	32.38	34.13	33.59	1.81	1.71	1.74	17.9	19.9	19.3
All employees ¹	99.94	57.37	78.05	2.76	1.78	2.29	36.1	32.1	34.1
SASKATCHEWAN									
Full-time	110.13	72.03	94.93	2.60	1.81	2.30	42.2	39.8	41.2
Part-time and casual	32.35	34.66	33.82	1.62	1.47	1.52	19.9	23.5	22.2
All employees ¹	97.78	59.29	80.11	2.54	1.73	2.19	38.4	34.2	36.5
ALBERTA									
Full-time	129.23	82.90	110.46	3.19	2.19	2.80	40.5	37.7	39.4
Part-time and casual	42.89	40.59	41.54	1.83	1.68	1.74	23.3	24.1	23.8
All employees ¹	109.56	66.62	89.75	3.00	2.05	2.59	36.4	32.4	34.6
BRITISH COLUMBIA									
Full-time	142.16	87.93	119.33	3.58	2.26	3.03	39.6	38.9	39.3
Part-time and casual	55.26	48.46	50.64	2.74	2.22	2.38	20.1	21.7	21.2
All employees ¹	124.41	70.88	97.39	3.49	2.25	2.90	35.6	31.5	33.5
CANADA									
Full-time	120.38	76.93	102.15	2.95	2.02	2.58	40.7	37.9	39.6
Part-time and casual	35.97	35.22	35.50	1.85	1.71	1.76	19.4	20.4	20.1
All employees ¹	105.85	62.75	85.30	2.89	1.97	2.48	36.6	31.7	34.3

¹ Includes earnings and hours of work of head office employees.

8.16 Wages and salaries, by industry and supplementary labour income, 1967-71, and by month 1971 and 1972¹ (million dollars)

Year and month	Industry						
	Agriculture	Forestry	Mining	Manufacturing	Construction	Transportation, communication and other utilities	Trade
Annual average							
1967	317	458	847	9,530	2,833	3,850	4,493
1968	335	450	925	10,157	2,899	4,112	4,914
1969 ^p	346	492	979	11,115	3,256	4,512	5,572
1970 ^p	365	486	1,153	11,758	3,432	4,854	6,047
1971 ^p	383	519	1,234	12,641	3,910	5,336	6,566
1971^p							
January	20.2	34.0	99.0	993.8	246.2	406.2	506.3
February	20.1	33.3	100.8	1,003.9	259.3	402.5	505.4
March	22.6	31.8	102.1	1,012.7	277.2	412.7	513.2
April	26.4	31.3	99.0	1,021.2	302.1	417.6	528.7
May	31.6	40.0	104.0	1,049.3	326.7	437.6	540.1
June	37.7	50.2	106.4	1,079.2	358.9	456.6	554.5
July	44.1	52.0	104.5	1,052.6	367.3	465.1	551.0
August	49.4	50.9	105.9	1,082.3	374.6	473.4	546.7
September	43.6	54.2	105.6	1,100.2	380.0	465.0	560.0
October	35.2	53.1	103.5	1,091.5	379.2	465.8	571.8
November	28.3	48.8	103.4	1,084.5	348.6	468.2	584.9
December	23.9	39.6	100.2	1,069.2	290.0	465.6	602.9
1972^p							
January	21.2	36.2	101.8	1,075.9	280.4	461.5	570.6
February	21.1	38.8	103.4	1,082.5	287.4	463.8	569.3
March	23.6	35.5	105.0	1,103.6	296.8	472.5	586.4
April	27.6	32.7	103.3	1,129.5	322.0	478.1	598.0
May	33.1	41.1	105.0	1,145.5	331.4	487.1	613.2
June	39.6	45.4	106.1	1,169.9	365.3	499.4	628.4
July	46.4	47.2	103.1	1,145.5	382.6	502.4	616.3
August	52.1	54.9	105.0	1,183.4	406.4	503.1	614.5
September	46.2	59.0	105.1	1,214.0	406.7	499.8	626.3
October	37.4	58.7	111.9	1,213.4	395.1	505.6	646.8
November	30.2	56.6	113.0	1,209.1	371.5	504.0	662.8
December	25.4	48.3	112.6	1,194.0	305.5	510.4	675.8

8.16 Wages and salaries, by industry and supplementary labour income, 1967-71, and by month 1971 and 1972¹ (million dollars) (concluded)

Year and month	Industry					
	Finance, insurance and real estate	Service	Public administra- tion and defence ²	Total wages and salaries ³	Supple- mentary labour income	Total labour income
Annual average						
1967	1,739	6,973	2,356	33,437	1,866	35,303
1968	1,941	7,918	2,662	36,360	2,084	38,444
1969 ^D	2,188	9,133	3,109	40,745	2,291	43,036
1970 ^D	2,380	10,276	3,408	44,210	2,423	46,633
1971 ^D	2,589	11,477	3,908	48,615	2,644	51,260
1971 ^D						
January	206.0	899.4	291.5	3,704.5	228.3	3,932.8
February	206.1	918.3	298.9	3,750.4	227.6	3,978.1
March	210.8	936.0	297.7	3,818.4	228.9	4,047.3
April	213.4	954.1	304.0	3,900.0	227.3	4,127.4
May	217.7	970.4	351.3	4,074.6	233.4	4,308.0
June	220.8	991.6	330.8	4,193.1	235.2	4,428.2
July	221.1	886.9	333.4	4,086.5	220.7	4,307.1
August	217.6	884.4	334.9	4,127.8	216.3	4,344.1
September	217.3	1,003.7	333.5	4,269.5	215.6	4,485.0
October	217.8	1,006.7	337.2	4,265.2	208.6	4,473.8
November	218.0	1,012.4	349.4	4,249.1	205.7	4,454.9
December	222.7	1,013.4	345.6	4,176.0	196.8	4,372.8
1972 ^D						
January	224.8	1,021.7	357.4	4,152.8	265.0	4,417.8
February	229.3	1,036.7	347.7	4,181.2	265.5	4,446.6
March	236.3	1,052.3	357.5	4,271.4	268.7	4,540.1
April	236.5	1,025.6	344.8	4,300.8	265.2	4,566.0
May	237.9	1,079.7	354.1	4,433.2	266.5	4,699.7
June	243.9	1,100.7	379.8	4,586.2	271.2	4,857.4
July	244.2	988.9	386.4	4,473.7	255.1	4,728.8
August	242.0	980.2	383.8	4,534.2	249.5	4,783.7
September	243.0	1,104.5	388.3	4,698.2	249.4	4,947.6
October	246.3	1,111.3	382.9	4,715.1	241.6	4,956.8
November	247.6	1,124.3	380.2	4,702.0	237.4	4,939.4
December	251.0	1,166.8	415.8	4,710.4	229.6	4,940.0

¹ Table based on the 1960 Standard Industrial Classification. Figures not adjusted for seasonality.

² Excludes military pay and allowances.

³ Includes fishing and trapping.

8.17 Percentage composition of the total pay package, all employees

All employees	Manu- facturing 1968	Mining 1969	Finance, insurance and real estate 1970	Transportation, communication and other utilities 1970
Basic pay for regular work	100.00	100.00	100.00	100.00
Additional pay for time worked	7.31	12.36	1.46	5.95
Paid absence	9.54	9.98	9.98	11.79
Miscellaneous payments to employees	1.58	2.31	1.80	1.04
Employer payments to employee welfare and benefit plans	9.73	10.22	8.14	10.51
Total labour cost	128.14	134.87	121.39	129.29

8.18 Percentage composition of the total pay package, salaried employees and wage-earners

Item	Manu- facturing 1968	Mining 1969	Finance, insurance and real estate 1970	Transportation ¹ , communication and other utilities 1970
SALARIED EMPLOYEES				
Basic pay for regular work	100.00	100.00	100.00	100.00
Additional pay for time worked	2.52	1.99	1.44	3.10
Paid absence	9.70	10.33	10.06	11.64
Miscellaneous payments to employees	2.49	1.99	1.80	1.21
Employer payments to employee welfare and benefit plans	8.88	9.77	8.24	9.91
Total labour cost	123.56	124.08	121.52	125.86
WAGE-EARNERS				
				(a) (b)
Basic pay for regular work	100.00	100.00	100.00	100.00
Additional pay for time worked	9.99	19.13	2.00	6.05
Paid absence	9.46	9.79	8.45	10.75
Miscellaneous payments to employees	1.08	2.51	2.87	0.88
Employer payments to employee welfare and benefit plans	10.22	10.52	5.82	10.76
Total labour cost	130.66	141.95	119.14	128.44

¹ In the transportation industry separate data were collected for those employees classified as operating employees or flight crews, column (a); other employees, column (b).

8.19 Paid absence as percentage of basic pay for regular work

Type of absence	Manu- facturing 1968	Mining 1969	Finance, insurance and real estate 1970	Transportation ¹ , communication and other utilities 1970
ALL EMPLOYEES				
Paid holidays	3.54	3.18	3.76	3.97
Vacation pay	5.50	6.34	5.09	6.26
Paid sick leave	0.44	0.40	1.06	1.29
Personal leave and other paid absence	0.06	0.06	0.07	0.27
Total paid absence	9.54	9.98	9.92	11.79
SALARIED EMPLOYEES				
Paid holidays	3.60	3.52	3.77	4.06
Vacation pay	5.43	5.88	5.13	6.07
Paid sick leave	0.60	0.83	1.08	1.25
Personal leave and other paid absence	0.80	0.10	0.08	0.26
Total paid absence	10.43	10.33	10.06	11.64
WAGE-EARNERS				
				(a) (b)
Paid holidays	3.52	2.97	3.58	4.04 3.50
Vacation pay	5.55	6.64	4.36	6.37 6.40
Paid sick leave	0.35	0.12	0.48	1.57 0.49
Personal leave and other paid absence	0.04	0.05	0.03	0.26 0.36
Total paid absence	9.46	9.79	8.45	12.24 10.75

¹ (a) Operating employees and flight crews; (b) other employees.

8.20 Employer payments to employee welfare and benefit plans as percentages of basic pay for regular work

Plan	Manu- facturing 1968	Mining 1969	Finance, insurance and real estate 1970	Transportation ¹ , communication and other utilities 1970
ALL EMPLOYEES				
Workmen's compensation	1.10	3.08	0.04	0.85
Unemployment insurance	0.90	0.88	0.78	0.72
Canada/Quebec Pension Plan	1.41	1.41	1.36	1.23
Private pension plans	3.24	2.48	4.43	5.83
Life and health insurance plans ²	2.91	2.03	1.46	1.80
Other plans	0.17	0.34	0.07	0.08
Total employer expenditure	9.73	10.22	8.14	10.51
SALARIED EMPLOYEES				
Workmen's compensation	0.79	1.69	0.02	0.45
Unemployment insurance	0.48	0.40	0.78	0.46
Canada/Quebec Pension Plan	1.15	1.06	1.35	1.14
Private pension plans	3.79	4.01	4.57	6.19
Life and health insurance plans ²	2.40	1.96	1.44	1.57
Other plans	0.20	0.67	0.08	0.10
Total employer expenditure	8.88	9.79	8.24	9.91
WAGE-EARNERS				
				(a) (b)
Workmen's compensation	1.30	3.99	0.40	1.05 1.26
Unemployment insurance	1.12	1.17	0.76	0.87 0.89
Canada/Quebec Pension Plan	1.53	1.64	1.35	1.31 1.20
Private pension plans	2.92	1.53	1.51	5.70 5.26
Life and health insurance plans ²	3.20	2.06	1.76	1.92 2.04
Other plans	0.15	0.12	0.04	0.05 0.11
Total employer expenditure	10.22	10.52	5.82	10.90 10.76

¹ (a) Operating employees and flight crews; (b) other employees.

² Comprises provincial medicare and private plans.

8.21 Index numbers of average wage rates for certain main industrial groups, 1967-71 (1961 = 100)

Year	Logging	Mining	Manufacturing			Con- struc- tion	Trans- porta- tion, commu- nication and other utilities	Trade	Service	Local govern- ment	General index
			Durable goods	Non- durable goods	All manu- fac- turing						
1967	156.0	130.2	130.0	131.0	130.5	142.0	132.8	132.5	133.9	135.9	133.4
1968	162.5	138.9	139.7	141.4	140.6	154.0	143.4	144.5	141.8	146.7	143.8
1969	179.8	146.2	149.7	152.5	151.2	167.0	154.9	155.2	154.0	163.4	155.1
1970	192.8	159.4	162.3	163.2	162.9	195.5	166.2	166.1	166.4	183.3	167.8
1971	212.3	169.9	175.7	176.9	176.3	223.7	183.8	178.9	178.0	200.2	182.3

8.22 Average wage and salary rates for selected occupations in certain cities across Canada, Oct. 1, 1971

Industry and occupation	Halifax, NS	Saint John, NB	Sherbrooke, Que.	Montreal, Que.	Toronto, Ont.	Hamilton, Ont.	Winnipeg, Man.	Regina, Sask.	Saskatoon, Sask.	Calgary, Alta.	Edmonton, Alta.	Vancouver, BC
	\$ per hr	\$ per hr	\$ per hr	\$ per hr	\$ per hr	\$ per hr	\$ per hr	\$ per hr	\$ per hr	\$ per hr	\$ per hr	\$ per hr
CONSTRUCTION (building and structures only)												
Bricklayer and mason	4.50	4.50	4.30	5.26	6.00	6.73	5.15	4.50	4.50	5.25	5.25	5.91
Bulldozer operator	4.05	4.05	4.10	4.82	5.80	6.40	4.10	4.20	4.20	4.90	4.90	5.72
Carpenter	4.10	4.10	4.10	5.04	6.32	6.55	5.00	4.21	4.21	5.15	5.15	6.06
Cement finisher	4.28	3.35	4.02	4.79	6.35	6.50	4.20	3.86	3.86	4.80	4.80	5.50
Crane operator	4.25	4.55	4.00	5.13	7.00	7.50	4.00	4.40	4.40	5.55	5.55	5.95
Electrician	4.97	5.20	4.30	5.48	7.40	7.80	5.00	5.17	5.17	6.00	6.00	6.80
Labourer	3.35	3.25	3.60	4.13	4.65	4.52	3.75	3.19	3.19	4.10	4.10	4.79
Marble and tile setter	4.18	4.50	4.20	5.26	5.77	5.00	4.75	4.25	4.25	4.90	4.90	5.56
Painter (brush)	3.45	3.65	4.05	4.92	5.60	5.40	4.50	3.78	3.60	5.00	5.00	5.80
Plasterer	4.28	4.50	4.30	5.26	6.09	6.23	4.90	4.90	4.90	5.65	5.65	6.20
Plumber	4.86	4.90	4.40	5.48	6.81	7.23	5.00	5.17	5.17	6.00	6.00	6.70
Sheet metal worker	4.86	4.65	4.40	5.25	6.30	7.10	5.00	5.19	5.00	5.75	5.90	6.25
MANUFACTURING AND OTHER INDUSTRIES¹												
General labourer, male	2.60	2.70	2.59	2.76	2.94	3.19	2.94	2.79	2.87	3.02	3.05	3.36
Maintenance trades	3.40	3.38	3.16	3.64	3.84	4.19	3.88	3.52	3.63	4.50	4.45	4.55
Carpenter	3.65	4.00	3.54	4.05	4.29	4.62	4.08	4.30	4.24	4.67	4.43	4.96
Electrician	3.63	3.67	3.48	3.85	4.16	4.55	3.92	4.29	3.83	4.13	4.28	4.49
Machinist	3.38	3.69	3.03	3.71	3.92	4.04	3.68	3.48	3.70	3.91	3.81	4.47
Mechanic	4.05	4.03	3.55	3.85	4.43	4.53	4.03	4.36	3.84	4.46	4.31	4.80
Millwright	4.40	4.05	3.56	4.07	4.23	4.44	4.03	4.06	3.88	4.31	4.22	4.53
Pipefitter	—	—	—	3.82	4.33	4.26	3.77	—	—	4.06	4.02	4.63
Tool and die maker	3.66	3.74	3.42	3.55	3.66	4.40	3.82	3.91	3.71	4.16	4.13	4.63
Welder	—	—	—	—	—	—	—	—	—	—	—	—
Service occupations	2.58	2.53	2.82	3.19	3.42	3.55	2.90	2.86	2.90	3.42	3.18	4.06
Truck driver, light and heavy	2.69	3.16	2.59	3.32	3.40	3.57	3.16	3.39	3.05	3.29	3.38	4.28
Truck driver, power	\$ per wk	\$ per wk	\$ per wk	\$ per wk	\$ per wk	\$ per wk	\$ per wk	\$ per wk	\$ per wk	\$ per wk	\$ per wk	\$ per wk
OFFICE OCCUPATIONS, MALE												
Bookkeeper, senior	140	135	133	145	162	154	138	143	150	165	150	161
Clerk, intermediate	109	113	103	116	118	135	113	102	114	124	117	129
Clerk, senior	138	139	133	149	153	165	145	133	144	160	147	167
Clerk, order	114	106	120	127	135	147	117	115	116	129	130	140
Draughtsman, intermediate	131	158	130	148	159	162	143	129	140	147	147	160
Draughtsman, senior	164	187	168	185	193	192	184	160	165	183	173	186
OFFICE OCCUPATIONS, FEMALE												
Clerk, intermediate	96	94	91	103	105	100	94	94	98	99	99	107
Machine operator	—	—	—	—	—	—	—	—	—	—	—	—
Bookkeeping	80	72	79	86	96	93	82	83	81	87	89	98
Calculating	75	74	74	91	97	92	88	94	85	92	95	104
Secretary, senior	110	102	100	123	125	123	115	112	111	121	117	123
Stenographer, junior	86	83	86	92	97	97	86	84	82	90	88	95
Stenographer, senior	98	95	—	107	110	112	105	95	96	104	104	110
Switchboard operator and receptionist	79	76	80	90	94	91	80	79	82	86	86	95
Typist, junior	73	67	76	79	84	87	77	75	77	82	80	83
Typist, senior	87	79	85	93	98	95	90	89	83	95	92	98

¹ "Other industries" consists of logging; mining; transportation (all sectors including air transport), storage and communication (including radio and TV); public utilities; trade; finance; and government and personal service.

8.23 Summary of selected working conditions of non-office and office employees in manufacturing and all industries, 1969-71

Item		1969		1970		1971	
		Manu- facturing industries	All industries	Manu- facturing industries	All industries	Manu- facturing industries	All industries
Coverage							
NON-OFFICE EMPLOYEES							
Reporting establishments	No.	8,980	21,381	8,817	22,177	8,446	21,297
Employees	"	988,803	2,246,113	909,181	2,209,311 ^r	905,948	2,297,314
OFFICE EMPLOYEES							
Reporting establishments	No.	9,079	22,986	8,786	23,806	8,278	22,715
Employees	"	358,360	1,234,264	305,716	1,120,404	272,894	1,132,915
Percentage of non-office employees							
STANDARD WEEKLY HOURS							
40 and under		82	81	84	82	82	83
Over 40 and under 44		6	4	5	4	5	3
44		2	3	1	2	2	2
45		6	4	5	5	4	4
Over 45 and under 48		1	1	5 ¹	7 ¹	4 ¹	5 ¹
48		2	3	—	—	—	—
Over 48		2	2	—	—	—	—
Employees on a five-day week		95	89	95	91	95	90
VACATIONS WITH PAY							
Two weeks		97	93	96	93	97	90
After: 1 year or less		59	69	70	75	77	78
2 years		13	9	13	10	16	10
3 years		21	12	11	7	3	2
4-5 years		3	2	1	1	1	1
Other periods		1	1	1	1	—	—
Three weeks		83	83	84	83	86	84
After: Less than 10 years		41	51	53	57	63	69
10 years		31	23	20	17	17	11
11-14 years		5	3	—	—	—	—
15 years		7	6	4	4	4	3
Over 15 years		1	1	7 ²	6 ²	3 ²	2 ²
Four weeks		64	66	69	69	71	72
After: Less than 25 years		47	48	46	42	66	69
25 years		6	6	5	8	3	2
More than 25 years and/or other provisions		10	12	17	17	—	—
Paid statutory holidays		98	96	97	95	98	96
6 or less		5	5	4	4	4	3
7		5	4	4	4	3	4
8		30	26	17	14	15	12
9		38	32	39	34	37	33
More than 9		20	29	31	37	38	44
Percentage of office employees							
STANDARD WEEKLY HOURS							
Under 37½		30	34	26	36	29	37
37½		44	43	43	44	42	43
Over 37½ and under 40		4	2	4	2	4	2
40		20	19	24	16	23	16
Over 40		1	2	2	2	2	2
Employees on a five-day week		99	98	99	98	99	98
VACATIONS WITH PAY							
Two weeks		99	83	97	95	97	92
After: 1 year or less		93	80	90	91	91	89
2 years		4	2	4	3	5	2
3 years		2	1	2	1	1	—
5 years		—	—	—	—	—	—
Other periods		—	—	1	—	—	—
Three weeks		92	94	93	94	94	95
After: Less than 10 years		47	66	61	72	71	84
10 years		38	22	24	15	18	10
11-14 years		3	2	—	—	—	—
15 years		4	4	3	4	3	2
Over 15 years		—	—	5 ²	3 ²	2 ²	1 ²
Four weeks		78	82	81	84	82	86
After: Less than 25 years		61	63	58	48	78	82
25 years		8	10	5	9	3	3
More than 25 years and/or other provisions		10	9	19	28	—	—
Paid statutory holidays		100	100	99	99	100	100
1-6		1	1	1	1	1	1
7		2	2	2	2	2	2
8		44	17	15	10	13	9
9		52	34	39	33	35	33
More than 9		2	46	39	51	48	55

¹ Standard weekly hours over 45.² Three weeks vacation after 11-14 years, or over 15 years.

8.24 Trusteed pension funds, income, expenditures and assets, 1969-71

Item	1969	1970 ^a	1971
TRUST ARRANGEMENTS	<i>No.</i>	<i>No.</i>	<i>No.</i>
(a) Corporate trustees	2,996	2,856	2,966
(b) Individual trustees	981	912	888
(c) Combinations of (a) and (b)	63	61	64
(d) Pension fund societies	32	30	28
Total trustee funds	4,072	3,859	3,946
INCOME	<i>\$'000,000</i>	<i>\$'000,000</i>	<i>\$'000,000</i>
Total contributions	961	1,054	1,260
Employer	591	658	798
Employee	370	396	462
Investment income	475	546	631
Net profit on sale of securities	48	15	34
Other	10	10	21
Total income	1,494	1,625	1,946
EXPENDITURES			
Pension payments out of funds	333	377	482
Cost of pension purchased	11	16	21
Cash withdrawals	95	110	115
Administration costs	9	12	15
Net loss on sale of securities	10	99	60
Other expenditures	18	15	57
Total expenditures	476	629	750
ASSETS (book value)			
Investment in pooled funds	749	797	894
Investment in mutual funds	52	55	51
Bonds	5,285	5,766	6,386
Bonds of or guaranteed by Government of Canada	503	471	424
Bonds of or guaranteed by provincial governments	2,707	2,967	3,324
Bonds of Canadian municipal governments, school boards, etc.	733	761	749
Other Canadian	1,326	1,555	1,878
Non-Canadian	16	12	11
Stocks	2,425	2,680	3,214
Canadian, common	1,715	2,018	2,531
Canadian, preferred	76	72	79
Non-Canadian, common	628	580	596
Non-Canadian, preferred	6	10	8
Mortgages	863	1,022	1,170
Insured residential (NHA)	437	522	641
Conventional	426	500	529
Real estate and lease-backs	52	48	47
Miscellaneous			
Cash on hand and in chartered banks	105	136	136
Guaranteed investment certificates	100	110	96
Short-term investments	173	277	247
Accrued interest and dividends receivable	80	90	104
Accounts receivable	115	75	113
Other assets	4	3	3
Total assets	10,003	11,059	12,461

8.25 Activities of the Unemployment Insurance Commission, 1968-72, and by month 1971 and 1972

Year, month and end of period	Activity			Claims data ('000)	
	Fund (\$'000,000)			Claimants for UIC benefits (end of period) ¹	Initial and renewal claims received
	Employer-employee contributions	Total revenue	Balance in fund, end of period		
1968	398.76	494.52	426.1	423	1,928
1969	493.68	618.60	545.8	410	1,855
1970	492.84	622.56	473.2	541	2,261
1971	526.73	652.91	235.5	603	2,371
1972	—	—	—	804	2,469
1971					
January	43.22	54.52	442.0	844	289
February	38.70	48.96	390.0	888	206
March	37.62	47.27	323.0	857	222
April	39.35	49.05	272.0	819	209
May	40.36	50.00	244.5	496	155
June	41.97	51.84	247.1	420	142
July ²	45.04	55.49	258.7	409	154
August	49.85	61.26	273.9	411	129
September	46.09	56.74	281.8	433	144
October	49.50	60.83	290.4	436	164
November	48.76	59.94	280.9	538	250
December	46.27	57.01	235.5	689	307

8.25 Activities of the Unemployment Insurance Commission, 1968-72, and by month 1971 and 1972 (concluded)

Year, month and end of period	Activity			Claims data ('000)		
	Fund (\$'000,000)	Total revenue	Balance in fund, end of period	Claimants for UIC benefits (end of period) ¹	Initial and renewal claims received	
	Employer-employee contributions					
1972						
January	—	—	—	827	280	
February	—	—	—	912	203	
March	—	—	—	914	182	
April	—	—	—	874	175	
May	—	—	—	814	175	
June	—	—	—	753	182	
July	—	—	—	762	194	
August	—	—	—	722	165	
September	—	—	—	692	173	
October	—	—	—	709	199	
November	—	—	—	765	266	
December	—	—	—	903	275	
Benefits payments						
	Number of weeks ('000)	Benefits paid (\$'000)				
		Regular	Sickness	Maternity	Retirement	Fishing
						Total ³
1968	16,488	—	—	—	—	438,128
1969	15,734	—	—	—	—	498,992
1970	19,817	—	—	—	—	695,222
1971	22,634	—	—	—	—	890,594
1972	30,462	1,764,040	58,855	36,431	2,440	20,402
1972						
January	2,363	—	—	—	—	85,713
February	2,768	—	—	—	—	100,928
March	3,198	—	—	—	—	114,302
April	2,767	—	—	—	—	100,005
May	2,199	—	—	—	—	77,541
June	1,396	—	—	—	—	49,200
July ²	1,160	41,722	1	4	157	41,884
August	1,164	45,465	68	285	192	46,014
September	1,185	49,111	499	1,073	242	50,937
October	1,128	49,334	1,080	1,594	219	52,242
November	1,402	65,591	1,641	1,953	254	69,450
December	1,904	96,952	2,232	2,127	228	102,379
1972						
January	2,376	131,661	2,523	1,886	216	4,088
February	3,140	180,811	4,215	2,363	205	6,090
March	3,258	186,771	6,142	2,835	183	5,039
April	2,838	164,184	5,481	2,436	118	2,909
May	3,033	176,775	5,715	2,730	117	1,303
June	2,291	131,120	5,293	2,656	161	160
July	2,109	120,962	4,482	2,334	215	39
August	2,377	136,979	4,624	2,885	227	34
September	2,085	121,516	4,210	3,127	239	24
October	2,205	129,357	5,193	4,026	258	28
November	2,284	134,400	5,516	4,689	265	47
December	2,466	149,504	5,461	4,464	236	641

¹ Persons who have applied for or are in receipt of unemployment insurance benefits at end of month; annual figures are annual averages.

² Commencement of new Unemployment Insurance Act.

³ Figures are adjusted for cancellation of warrants and collection of overpayments; prior to July 1971, total includes ordinary, seasonal and fishing benefits.

8.26 Fatal employment injuries¹, by industry, 1969-71

Industry	Number			Percentage of total		
	1969	1970	1971	1969	1970	1971
Agriculture	30	15	20	2.7	1.5	1.9
Forestry	88	88	92	7.8	8.8	8.7
Fishing and trapping	18	26	11	1.6	2.6	1.0
Mining, quarrying and oil wells	162	140	151	14.4	14.0	14.2
Manufacturing	207	176	167	18.4	17.6	15.8
Construction	235	190	219	20.9	19.0	20.7
Transportation, communication and other utilities	206	171	194	18.4	17.0	18.3
Trade	60	60	75	5.4	6.0	7.1
Finance, insurance and real estate	2	3	3	0.2	0.3	0.3
Service	50	46	65	4.5	4.6	6.1
Public administration	64	78	62	5.7	7.8	5.8
Not specified	—	8	1	—	0.8	0.1
Total	1,122	1,001	1,060	100.0	100.0	100.0

¹ The Canada Department of Labour compiles statistics of all fatal industrial accidents; Workmen's Compensation Board statistics (Table 8.27) include only those accidents covered by legislation.

8.27 Compensation claims for employment injuries and payments made, 1970 and 1971

Year and province	Compensation claims					Workmen's Compensation Board payments ² \$
	Medical aid only ¹	Temporary disability	Permanent disability	Fatal injury	Total	
1970P						
Newfoundland	5,658	4,992	116	36	10,802	4,309,922
Prince Edward Island	1,142	1,134	27	4	2,307	581,874
Nova Scotia	14,271	10,817	450	27	25,565	9,656,517
New Brunswick	15,154	8,833	327	33	24,347	6,085,479
Quebec ³	116,816	61,918	6,875	211	185,820	64,462,909
Ontario ³	225,881	131,740	5,450	296	363,367	140,742,370
Manitoba	15,901	14,149	503	34	30,587	9,067,666
Saskatchewan	13,913	10,510	487	36	24,946	7,742,843
Alberta	33,391	25,015	1,200	89	59,695	22,152,025
British Columbia	53,822	28,769	1,468	149	84,208	39,711,639
Total, 1970P	495,949	297,877	16,903	915	811,644	304,513,244
1971P						
Newfoundland	6,017	5,246	55	19	11,337	2,967,898
Prince Edward Island	1,102	1,116	3	1	2,222	654,892
Nova Scotia	13,292	11,284	131	28	24,735	11,539,890
New Brunswick	15,699	8,708	319	30	24,756	6,526,568
Quebec ³	112,069	69,825	7,768	254	189,916	72,203,103
Ontario ³	219,904	131,189	5,352	324	356,769	136,798,771
Manitoba	15,421	13,903	541	33	29,898	9,212,549
Saskatchewan	14,520	10,969	508	37	26,034	8,714,084
Alberta	35,231	26,556	1,157	93	63,037	22,502,829
British Columbia	58,108	30,368	1,428	172	90,076	41,606,788
Total, 1971P	491,363	309,164	17,262	991	818,780	312,727,372

¹ Injuries requiring medical treatment but not causing disability for a sufficient period to qualify for compensation; the period varies among provinces.

² Includes, except where noted otherwise, payments to compensate loss of earnings, medical aid payments, cost of rehabilitation and hospitalization (not including capital expenditures) and pensions paid (not pensions awarded) for temporary and permanent disabilities; the Quebec compensation figure includes pensions awarded as well as pensions paid.

³ Distribution partly estimated.

8.28 Union membership in Canada, 1952-72 (thousands)

Year	Members	Year	Members	Year	Members
1952	1,146	1959	1,459	1966	1,736
1953	1,220	1960	1,459	1967	1,921
1954	1,268	1961	1,447	1968	2,010
1955	1,268	1962	1,423	1969	2,075
1956	1,352	1963	1,449	1970	2,173
1957	1,386	1964	1,493	1971	2,211
1958	1,454	1965	1,589	1972	2,371

8.29 Union membership, by type of union and affiliation, as at January 1972

Type and affiliation	Unions No.	Locals No.	Membership	
			No.	%
International unions	99	4,914	1,411,852	59.6
AFL-CIO/CLC	84	4,463	1,195,398	50.5
CLC only	4	146	115,671	4.9
AFL-CIO only	5	8	619	1
Unaffiliated unions	6	297	100,164	4.2
National unions	68	5,278	892,691	37.7
CLC	19	2,862	401,098	16.9
CNTU	12	1,135	218,526	9.2
CCU	4	27	10,511	0.5
Unaffiliated unions	33	1,254	262,556	11.1
Directly chartered local unions	129	129	12,885	0.5
CLC	128	128	12,790	0.5
CNTU	1	1	95	1
Independent local organizations	141	141	53,213	2.2
Total	437	10,462	2,370,641	100.0

¹ Less than 0.1%.

8.30 Employees covered by all collective agreements for negotiating units covering 500 or more employees in all industries other than construction, as at Dec. 31, 1971¹

Region or province	Manufacturing industries			Non-manufacturing industries	All industries except construction
	Durable goods	Non-durable goods	Total manufacturing		
Atlantic	4,100	9,850	13,950	51,485	65,435
Newfoundland	—	3,400	3,400	6,600	10,000
Prince Edward Island	—	—	—	—	—
Nova Scotia	3,000	4,800	7,800	19,240	27,040
New Brunswick	1,100	1,650	2,750	25,645	28,395
Quebec	49,790	78,285	128,075	260,655	388,730
Ontario	107,015	61,720	168,735	171,910	340,645
Prairies	3,745	3,645	7,390	116,380	123,770
Manitoba	2,645	1,700	4,345	32,485	36,830
Saskatchewan	—	—	—	21,990	21,990
Alberta	1,100	1,945	3,045	61,905	64,950
British Columbia	48,830	16,750	65,580	77,000	142,580
Multi-provincial ²	47,890	24,150	72,040	365,900	437,940
Canada	261,370	194,400	455,770	1,043,330	1,499,100

¹ All agreements "in force", irrespective of the year of settlement; as at Dec. 31, 1971, this universe included 715 agreements covering 1.5 million employees.

² Agreements pertaining to workers located in more than one province and two agreements pertaining to the Northwest Territories.

8.31 Year-over-year percentage and cents-per-hour increases in base rates under major collective agreement, by month, 1971¹

Month	Collective agreement					
	Manufacturing		Non-durable goods		Total manufacturing	
	Durable goods					
	%	¢	%	¢	%	¢
January	8.6	24.3	7.2	18.1	8.1	21.8
February	8.9	25.3	7.8	19.7	8.6	23.0
March	9.2	26.3	7.8	19.8	8.7	23.5
April	9.0	25.9	7.5	19.3	8.5	23.1
May	8.8	25.5	9.1	23.6	9.1	24.8
June	9.3	27.1	9.1	23.6	9.4	25.8
July	9.5	27.9	9.9	25.9	9.8	27.2
August	9.5	28.0	9.1	23.9	9.5	26.5
September	9.9	29.2	8.1	21.5	9.4	26.2
October	8.6	25.7	7.6	20.3	8.4	23.7
November	9.4	28.1	7.4	20.0	8.7	24.9
December	8.2	25.1	8.0	21.6	8.2	23.7
	Commercial industries except construction		Non-commercial industries ²		All industries except construction	
	%	¢	%	¢	%	¢
January	7.3	19.3	6.8	16.9	7.1	18.4
February	7.6	20.1	6.0	15.0	7.0	18.3
March	7.7	20.3	5.7	14.3	6.9	18.2
April	7.9	21.0	5.4	13.8	6.9	18.5
May	9.1	24.4	5.4	13.7	7.7	20.5
June	9.6	25.8	6.2	15.7	8.3	22.2
July	9.9	26.6	6.4	16.3	8.6	23.0
August	9.8	26.7	6.5	16.6	8.6	23.1
September	9.6	26.2	7.0	18.0	8.6	23.3
October	8.3	23.0	7.4	19.1	7.9	21.7
November	8.4	23.3	7.5	19.5	8.0	22.0
December	8.2	23.0	7.9	20.5	8.1	22.3

¹ Based on all major collective agreements covering 500 or more employees in force except those in the construction industry. Data refer to rates actually paid in the month specified; no adjustments have been made for retroactive wage increases.

² This category consists of public administration and defence; education and related institutions; hospitals; welfare organizations; religious organizations; private households; miscellaneous services; highway and bridge maintenance; water system and other utilities.

8.32 Strikes and lockouts, by industry, 1971 with totals for 1967-71

Industry	Strikes and lockouts beginning during year	Strikes and lockouts in existence during year		
		Strikes and lockouts	Workers involved	Duration in man-days
Agriculture	—	—	—	—
Forestry	27	27	4,203	49,480
Fishing and trapping	1	1	4,500	40,500
Mines	19	19	7,680	193,490
Metal	14	14	6,160	157,110
Mineral fuels	2	2	1,060	3,180
Non-metal	2	2	340	32,600
Quarries	1	1	120	600
Incidental services	—	—	—	—

8.32 Strikes and lockouts, by industry, 1971 with totals for 1967-71 (concluded)

Industry		Strikes and lockouts beginning during year	Strikes and lockouts in existence during year		
			Strikes and lockouts	Workers involved	Duration in man-days
Manufacturing		268	278	94,331	1,541,520
Food and beverages		32	32	5,070	118,740
Tobacco products		1	1	250	620
Rubber		7	7	2,367	19,210
Leather		3	3	471	12,860
Textiles		8	8	784	16,850
Knitting mills		2	2	515	3,640
Clothing		4	4	1,048	19,780
Wood		15	15	2,704	20,060
Furniture and fixtures		7	7	1,102	21,440
Paper		22	22	7,702	93,930
Printing and publishing		8	10	543	47,050
Primary metals		12	13	1,380	31,840
Metal fabricating		35	36	4,358	131,250
Machinery		15	15	5,022	44,850
Transportation equipment		43	44	46,429	618,190
Electrical products		16	19	6,050	76,350
Non-metallic mineral products		21	22	6,711	228,150
Petroleum and coal products		—	—	—	—
Chemical products		5	5	594	10,960
Miscellaneous manufacturing		12	13	1,231	25,750
Construction		72	72	23,868	400,990
Transportation and utilities		54	55	45,764	254,270
Transportation		32	32	17,347	136,770
Storage		1	1	12	180
Communication		9	9	12,347	29,530
Power, gas and water		12	13	16,058	87,790
Trade		38	46	4,857	81,040
Finance		1	1	227	1,140
Financial institutions		—	—	—	—
Insurance and real estate		1	1	227	1,140
Service		40	43	43,109	220,440
Education		20	20	40,722	174,750
Health and welfare		9	10	1,127	16,610
Religious organizations		—	—	—	—
Recreational services		1	1	157	790
Services to business		—	—	—	—
Personal services		7	8	672	12,710
Miscellaneous services		3	4	431	15,580
Public administration		27	27	11,092	83,720
Federal administration		1	1	56	900
Provincial administration		5	5	4,376	36,490
Local administration		21	21	6,660	46,330
Other government offices		—	—	—	—
Total	1971	547	569	239,631	2,866,590
	1970	503	542	261,706	6,539,560
	1969	566	595	306,799	7,751,880
	1968	559	582	223,562	5,082,732
	1967	498	522	252,018	3,974,760

Sources

8.1 - 8.5 Labour Force Survey Division, Household Statistics Branch, Statistics Canada.

8.6 - 8.20 Labour Division, General Statistics Branch, Statistics Canada.

8.21 - 8.23 Public Relations Branch, Canada Department of Labour.

8.24 - 8.25 Labour Division, General Statistics Branch, Statistics Canada. Table 8.25 from Statistics Canada monthly publication *Canadian Statistical Review* (Cat. No. 11-003). Statistics of unemployment insurance are compiled from material supplied by the Unemployment Insurance Commission.

8.26 - 8.32 Public Relations Branch, Canada Department of Labour.

Chapter 9

Scientific research

Early research in Canada was related mainly to the primary industries. Geological mapping and agricultural research were almost the only areas of scientific activity until the beginning of the present century. The National Research Council, which was set up in 1916 by the federal government to encourage and stimulate research in the universities and industry, established its own research laboratories in the late 1920s and early 1930s. During World War II, the National Research Council assumed responsibility for research and development activity for the Armed Services and for the development of atomic energy. After the War, in 1947, the Defence Research Board of the Department of National Defence was established to take over responsibility for military research and development and a Crown corporation, Atomic Energy of Canada Limited, was formed in 1952 to further the development of atomic energy in Canada. The National Research Council then reverted to its previous activities. Certain other Crown corporations such as Eldorado Nuclear Limited, Polymer Corporation Limited, and the Canadian National Railways also developed important research programs. The Medical Research Council was established in 1960 in association with the National Research Council.

Research councils were set up both before and after World War II in several provinces to improve utilization of provincial resources and industrial efficiency. The Ontario Research Foundation and B C Research, although established under provincial legislation, are self-governing institutions engaged in research and development on contract for manufacturers, departments of government and on their own account; they derive their revenue mainly from sponsored research. These councils and foundations have recently formed the Non-Profit Industrial Research Association of Canada (NIRAC).

Industrial research was slow to develop in Canada, although certain large industries, particularly the chemical and pulp and paper industries, have long histories of successful research and development. Since 1950, individual company programs, some aided by various government-sponsored incentive programs, have grown and diversified considerably. The degree of foreign ownership of manufacturing companies in Canada has undoubtedly had some influence on the development of industrial research, since Canadian subsidiaries of foreign companies had ready access to the research and development work of their parent companies. As a result, all but a few of these subsidiaries refrained from establishing their own laboratories. However, more recently, to meet the challenge of competition from other countries Canadian industry has increased its own scientific and technical investigations. The Sheridan Park Research Community, near Toronto, is an example of a recent concept for expanding and improving the efficiency of industrial research in Canada. A somewhat similar but more diffuse development took place earlier at Pointe Claire, Que. Industrial research centres of this type facilitate applied research and development activities for both scientists and engineers as they permit ready interchange of non-proprietary scientific and technical information and give them access to a wide variety of instrumentation, equipment and skills. The centres also provide an attractive environment for skilled personnel, which encourages trained scientists and engineers to stay in Canada.

A significant element in the training of scientists beyond the undergraduate level involves research and development activities undertaken in the universities as part of their program of graduate studies. These activities are related directly to the educational process and are important in the training of skilled personnel needed for the development of Canada's economy; they also create centres of basic research in Canada and serve as listening posts attuned to the progress of science and technology in other parts of the world.

9.1 Federal science policy

The ultimate authority for federal policy on science resides in the Cabinet. To exercise this authority a Cabinet committee known as the Committee of the Privy Council on Scientific and Industrial Research was established in the National Research Council Act. The Committee was chaired by the Minister designated in the National Research Council Act as responsible for that Council. The members were Ministers of other departments with significant science programs. The National Research Council for many years had the responsibility for advising

the Committee on science policy, complemented after 1949 by a panel of senior officials from the science-based departments and agencies. The Royal Commission on Government Organization pointed out, in 1963, that this apparatus had only infrequently tendered advice to the government.

In 1964, as a result of the recommendations of the Royal Commission on Government Organization, a Science Secretariat was created in the Privy Council Office. This Secretariat worked with the Cabinet Secretariat as part of the internal government structure to provide the most accurate and comprehensive background to Ministers at the time decisions on science policy were made. Its responsibilities included the monitoring of new program submissions, the initiation and formulation of new policies and program thrusts and the co-ordination of government participation in national and international science and technology activities. Later, in 1967, the Science Secretariat was granted the responsibility of nominating Counsellors (Scientific) for certain embassies and missions abroad, in close consultation with the Department of External Affairs.

In 1966, the federal government established the Science Council of Canada, a Crown corporation charged with independently assessing Canada's scientific and technological resources, requirements and potential and making recommendations thereon by publication of reports. The Science Council is concerned both with research and development and with the use of science and technology in the solution of Canada's social and economic problems. It draws its membership from industry, the universities and government, and its views are independent of those of the internal government structure.

The Council has published several reports based on commissioned studies from consultants on different areas of science and has also published its own reports making recommendations on these subjects. Some of the topics include upper atmosphere and space; the proposal for an intensive neutron generator; water resources research; university research and the federal government; scientific and technical information dissemination; earth and marine sciences; research in fisheries, wildlife, forestry resources and agriculture; a Canadian STOL (short take-off and landing) air transport system; communications network for computers; urban development; pollution problems; policies for basic biology and basic research; and policy issues in development of primary and secondary industries. In addition, the Council recommended that Canada focus its scientific and technological effort through the creation of "Major Programs" designed to help solve some of the country's social and economic problems. These programs include a space program for Canada, water resources management and development, transportation, urban development, computer applications and scientific and technological aid to developing areas of the world.

In 1967, a Special Senate Committee on Science Policy was formed to consider and report on the scientific policy of the federal government with the object of appraising its priorities, organization, budget and efficiency. The first published report (Vol. I, December 1970) describes what the Committee considered to be major deficiencies in the policy and the second (Vol. II, January 1972) contains specific recommendations on targets and strategies for the 1970s.

The Ministry of State for Science and Technology was established in 1971. The Minister formulates and develops policies for the optimum development and application of science and technology in Canada, co-ordinates science and technology within the federal government and fosters co-operation in science and technology with the provinces, with public and private organizations and with other nations. The Ministry has three branches: the International Branch which deals with international organizations, foreign governments and institutions; the Domestic Branch which handles relations with other departments and agencies, other levels of government, the universities, and other institutions; and the Policy Branch which assures the existence of planned, comprehensive and integrated federal policies for science and technology and advises on improving the efficiency and effectiveness of federal government activities in science and technology.

In 1972, the Minister of State for Science and Technology announced a new government "contracting-out" or "make-or-buy" policy, under which all new research and development (R&D) requirements of the federal government, except those falling within certain narrow criteria, will be contracted out to industry instead of being undertaken in government laboratories. The aim of this policy is to ensure that R&D results are translated more effectively into additional Canadian industrial capacity. Canadian industry undertakes too

little R&D relative to its needs and yet pays a much higher proportion of these costs than does industry in many other industrialized nations. Government expenditures on in-house research seem disproportionately large compared with the current levels of industrial research.

One of the first tasks facing the new Ministry was to take an overview of Canada's national resources in science and technology. During the first year, the survey of funds and manpower assigned by the federal government to scientific activities was extended to the social sciences and humanities. The results of these surveys are published in the annual "Green Book" under the title: *Scientific activities: federal government costs and expenditures*.

The Ministry of State for Science and Technology is also studying reporting mechanisms for research in progress in industry and universities and, as part of a national audit of research resources, is engaged in a survey of highly qualified manpower so as to promote a more comprehensive information base for improved policies and programs concerning this segment of the Canadian labour force. Productive consultations in these matters have been established between the Ministry, private industry, the universities and other levels of government.

9.2 Federal scientific research agencies

Research activities in the various federal government departments and agencies have expanded rapidly, at first because of the need for speeding up the production of raw materials, which were long the basis of Canada's export trade, and later because of increasing interest in the processing of raw materials, the necessity of meeting the needs of national defence and the developing consideration for many human and resource requirements. Expenditures of federal government agencies engaged in research activities are given in Table 9.6. Research activities of the Canada Department of Agriculture and the Canada Grains Commission are outlined in Chapter 11. Some of the activities carried on by the Department of National Health and Welfare and by the Medical Research Council are described briefly in Chapter 6.

9.2.1 The National Research Council

An outline of the historical development of the National Research Council of Canada appears in the *1969 Canada Year Book*, pp. 388-389. Most of NRC's nine divisions are located on a 400-acre site just east of Ottawa. A Prairie Regional Laboratory is located on the campus of the University of Saskatchewan in Saskatoon and an Atlantic Regional Laboratory on the campus of Dalhousie University in Halifax. Of the Council's 1971-72 appropriation of \$140.4 million, about \$67.5 million was used for scholarships and grants, \$48.7 million for the operation of the laboratories and \$8.4 million for the Industrial Research Assistance Program. In 1972 it had a staff of some 3,000 including about 750 holders of doctorate degrees. About 40 associate committees were active. In the year ended March 31, 1972, it supported some 4,600 university scientists and awarded 2,600 scholarships, bursaries and post-doctorate fellowships.

9.2.1.1 Organization

The National Research Council Act assigns to the Council the responsibility of undertaking, assisting or promoting scientific and industrial research in the following general areas: utilization of Canada's natural resources; improving technical methods and processes now used in Canadian industry and discovering new ones to provide for expansion or development of new industries; maintenance and improvement of the primary physical standards of measurement for Canada; determination of quality standards of material to be used in public works and standardization and certification of scientific and technical apparatus used in Canadian industry and government; and the fostering and carrying out of scientific and industrial research through operation of research laboratories, financial assistance for research activities in Canadian universities, financial assistance and promotion of research in industry, and operation of the National Science Library and the Technical Information Services.

The Council consists of four permanent officers, the President, Vice-President (Administration), and two Vice-Presidents (Scientific) and not more than 17 other members appointed by the Governor in Council. The Council, a body corporate required to meet at least three times a year, is responsible to a designated Minister of the Crown, who is a member of the Committee of the Privy Council on Scientific and Industrial Research. Except for the four permanent officers, Council members are appointed for a term of three years and serve without salary. They are drawn from the senior staffs of universities, industry and labour, in order to provide advice based on both scientific discipline and regional representation.

The President, who is the chief executive officer, is assisted by a number of Vice-Presidents and a Director General (Planning). The Director General (Planning), assisted by a small group of scientists, engineers and economists, is in charge of formulating long-range policies and plans, both for the research activities of NRC laboratories and for the support and encouragement of research in universities and industry; analyzing existing and alternative NRC projects and programs, taking into account both the scientific and economic aspects; and, in general, facilitating the task of identifying NRC priorities in terms of national needs.

One Vice-President (Scientific) is responsible for industrial research assistance and promotion, and another for the Council's awards program for support of university research. The laboratories and a number of administrative services of the Council come under the jurisdiction of a Vice-President (Laboratories).

Since April 1, 1970, federal research in astronomy has been consolidated under the National Research Council, which is now responsible for the operation of the Dominion Astrophysical Observatory, Victoria, BC, the Dominion Radio Astrophysical Observatory, Penticton, BC, the Time Service of Canada, the solar and meteor programs of the Dominion Observatory in Ottawa, and the Meteorite Observation and Recovery Project; the latter is a network of photographic stations with headquarters in Saskatoon, Sask.

The federal government has designated the National Research Council as the co-ordinating body for the further development of a national scientific and technical information system (STI), under the general direction of the National Librarian. The integrated national system, encompassing the natural sciences and engineering, will be decentralized and based on the existing resources and systems in industry, the universities and government.

9.2.1.2 Research activities

The NRC laboratories carry out long-term, applied and specific project research work, most of it industrially oriented although some programs are directed toward important national and regional problems and toward more basic and exploratory back-up research. A number of research projects are carried out on behalf of other government departments and agencies and a considerable amount of staff time is given to consulting on technical problems. In addition, some research projects are undertaken to solve a particular problem, or because of their potential for basically new technology. When successful, the desired result is the transfer of the new technology to productive channels in Canadian industry. New industries based on NRC-developed technology are beginning to be established, some located in large industrial centres and some in the Ottawa - Hull metropolitan area where they can maintain close contact with NRC laboratories and take advantage of the new technology generated by the laboratories of the Defence Research Board, Atomic Energy of Canada Limited, and the substantial research activities of several industrial firms in the area.

The Division of Biological Sciences was formed from the recent amalgamation of the former Division of Biology and the Biochemistry Laboratory. It provides greater flexibility and increased resources for achieving an integrated approach to significant biological problems. Problem orientation is facilitated by the formation of groups whose constitution may change as common interests develop or as new expertise is required. Such groups also include scientists in universities, industries and other governmental agencies.

Major research programs are under way in the study of: factors initiating or regulating proliferation of normal and malignant cells; the fate of persistent pollutants in flowing-water systems; the treatment of wastes from food-processing plants; the isolation and characterization of antigens from pathogenic organisms and the determination of structures of immunoglobulins as approaches leading to elucidation of the biochemical nature of the immune response in man; the application of spectroscopic techniques to the description of biological structures and mechanisms at the molecular level; patterns of nucleic acid-protein interactions; the production of useful metabolites from plant cells grown in submerged culture; radiation-induced lesions in organic molecules; and molecular structures of biochemical and other organic compounds as determined by X-ray crystallography.

The Division also houses the Environmental Secretariat serving the NRC Associate Committee on Scientific Criteria for Environmental Quality, whose function is to gather and evaluate the scientific knowledge of the effects of environmental contaminants. Documents listing scientific criteria derived from studies of cause-effect relations are in preparation.

Sub-committees are currently responsible for: pesticides and organohalogen compounds, heavy metals, air, water, biological, physical energy phenomena; and decisions on relevance. The Secretariat also operates, with the assistance of the National Science Library and the NRC Computation Centre, a scientific and technical information service on pollution research.

The Division of Building Research continues to reflect its triple role as an information, advisory and research agency serving the construction industry of Canada. In most years between 11,000 and 12,000 queries are answered from the Building Research Centre in Ottawa and the regional offices at Vancouver, Saskatoon, Toronto and Halifax. Some 700,000 copies of publications of all kinds were distributed on request during the past year, more than half of them accounted for by the monthly *Canadian building digest*, which is widely used in the teaching of building science and technology as well as by the industry generally.

The growth of the advisory role of the Division is evidenced by the increased number of committee memberships of all kinds held by the Division, which now totals 488. The annual revisions of the 1970 National Building Code, particularly in relation to fire safety provisions for high buildings, represents a substantial increase in this kind of activity for the officers who served as technical advisers to the various revision committees. Committee work has also begun on the preparation of the 1975 edition of the National Building Code and there has been substantial activity in relation to the preparation of a new edition of the National Fire Code to be issued in 1973. Assistance was given to the building standards work of the Canadian Standards Association, the Canadian Government Specifications Board and the American Society for Testing and Materials.

The Division provides opportunities for discussion, at the design stage, of the principles arising out of the steadily developing building science. Opportunities for communication of the results of research done in Canada and elsewhere are provided by building science seminars presented each year in Calgary and in Ottawa. Construction workshops, intended particularly for construction superintendents, were started in 1969 and are now held in nine centres across the country.

Growing interest in the economic development of northern Canada has brought an increasing demand for the experience and expertise of the Division's geotechnical section. Field studies are under way at present on the distribution of permafrost, uplift forces on structures during the freezing of the active layer in permafrost areas, on the forces of ice on structures and the use of insulation in road building. Work on high buildings is continued through projects on wind loads, seismic response of structures and air movement in buildings; the latter has assumed unusual importance because of its close relation to smoke movement. Special studies with the computer were carried out for various operational configurations of typical high buildings, supplemented by field trials in actual buildings incorporating new smoke control systems, as a contribution to information for further development of fire safety provisions in the National Building Code.

The Division of Chemistry covers a broad range of work from relatively short-term programs aimed at practical application in the natural resource and chemical industries, to long-term fundamental investigations in selected areas of scientific and technological importance. Active fields of research are analytical chemistry, chemical engineering, colloids, high polymers, high pressure physical chemistry, hydrocarbons, kinetics, photochemistry and catalysis, metallurgical chemistry, metallic corrosion and oxidation, textile chemistry, chemical spectroscopy, molecular structures, organic spectrochemistry, organic synthesis, thermochemistry, and theoretical studies.

Studies on membrane phenomena have suggested a number of applications for the concentration and separation of constituents of solutions by osmotic action. Considerable potential exists for reverse osmosis as a large-scale engineering process for saline water conversion and other concentration processes. Applications to problems of environmental quality appear to be of particular importance at the present time.

The spontaneous slow oxidation of organic molecules is often a limiting factor in the useful life of fuels, lubricants, foods and textiles. A long-term program of research on autoxidation has made substantial contributions to knowledge of the mechanisms by which these changes take place, and of how they can be accelerated or retarded. The application of this work to the aging process in animal life has aroused considerable interest from the medical profession.

Another laboratory has played a leading part in developing computerized methods for the automation of infrared spectroscopy. A file of some 30 computer programs put into modular form and distributed as a series of bulletins, card decks and tapes has attracted wide interest from industrial and university laboratories. This laboratory has also been intimately involved, in association with the CODATA Task Group for Computer Use, with the more general problems of computer-based techniques for the evaluation, storage and retrieval of numerical scientific data of various kinds. This work will have important applications in the pharmaceutical and petroleum industries.

The Division of Physics has three general areas of work: the improvement of Canada's social and economic climate by providing new data, concepts and designs to industry and government; the maintenance of physical standards of the highest quality; and the study of particular areas of physics in which the Division has a special competence. These activities are intermixed in sections devoted to acoustics, cosmic rays and high energy physics, electricity, heat, mechanics, metal physics optics, photogrammetry, plasma physics, spectroscopy, time, X-ray and nuclear radiation.

The Division maintains standards in the fields of mass, length, time, electricity, temperature radiation, photometry, colorimetry and acoustics. Besides providing these standards to Canadian industry and governments, the Division has a continuing program of comparisons of Canadian standards with those maintained by other industrial nations, thereby ensuring the acceptability of Canadian measurements in international trade. A third aspect of the standards work in the Division is a program to improve the primary standards so that future measurements will be more convenient and more precise.

During the past year the Division has been involved in a number of programs of significance to Canadian industry. A program of testing and calibrating high-quality industrial measuring devices has been continued and two seminars to acquaint industrial engineers with recent developments in measuring techniques have been held. An automatic colorimeter has been built and it appears that this instrument will be developed commercially. The instrument devised in previous years to measure automatically the depth, salinity and temperature of the ocean has been improved to give it a much faster response. A carbon dioxide laser designed for use in plasma studies has proved suitable for commercial production. A computer program designed to calculate the shielding of composite materials for various high energy radiations has been developed to aid in producing commercial shielding material. These and other commercial developments have their origin in the study and development of standards and in the studies of basic physics.

The long-range studies of a few selected areas of physics have been continued. During the past year significant new information on the nature of the charged particles captured by the earth's magnetic field has been obtained from experiments carried out with the ISIS-1 and ISIS-2 satellites. A number of the energy levels of light nuclei have been investigated with the linear electron accelerator and the positive ion accelerator. In the spectroscopy laboratory two-photon spectroscopy has been used for the first time to obtain accurate data on the vibrationally excited states of some simple molecules. The capabilities of the electrical standards laboratory have been extended by the construction of a very accurate low-frequency voltage divider. A new cesium time standard has been constructed which shows promise of considerably improving the accuracy of time measurements. The wavelengths and the frequencies of the emission lines from stabilized lasers have been measured and have yielded a more precise value for the velocity of light. Results on these and other similar programs are published in the scientific journals.

The Division of Mechanical Engineering. During 1971-72, a breakdown of the activities of this Division indicated the following: manufacturing technology 40%, transportation technology 40%, standards and standardization in the engineering industries 7%, computer applications 6%, engineering and biological control systems 4%, and medical and surgical instrumentation 3%.

Transportation work is about equally divided among land, sea and air developments. Land transportation activity is related mainly to the welding of rails for the Canadian railways, to apparatus for preventing the malfunctioning of railway switches in winter, to gas turbines and compressors for gas pipelines and to the examination of various aspects of container shipping, whether by rail or road. A substantial body of research is directed to special-purpose

ships and marine air-cushion vehicles and a large project is under way relating to navigational improvements of the St. Lawrence River in summer and winter.

Air transportation activities relate to the development and certification of new engines. In particular, research and novel investigations have been concentrated on engines appropriate to VTOL (vertical take-off and landing) aircraft.

Recent work in the manufacturing field is concerned with the application of two-phase heat transfer pipes to the maintenance of permafrost in areas of arctic construction, and with the de-icing of navigational buoys in waters off the Canadian east coast. Another project is the use of high-pressure water jets for cutting various kinds of materials.

Newsletters publicizing manufacturing processes not yet in general use in Canada are being widely distributed and have given rise to a most enthusiastic response through Canadian industry. Examples of the new technologies include the generation by grinding of precision case-hardened gear teeth, the generation of complicated shapes in a variety of materials by electrochemical machining, and the application of numerical control for much greater productivity of machine tools on single articles or small lots. In a number of instances, these technologies have proved of valuable consequence to Canadian industry.

In addition to the calibration of instruments, lubricating oils, fuels and various apparatus for Canadian industry, the various laboratories of the Division have been involved in the certification of the airworthiness of helicopters and various gas turbine engines in conditions of snow and sleet.

Because of the expense involved in the construction of prototype machinery and in arranging complicated experiments even with conventional machinery, the application of computers to the simulation of projected machinery performance has become very important. Typical examples of Division work pertain to the investigation of the parallel operation of compressors on gas pipelines; the transients resulting from changes in operation and the corresponding controls; systems analysis of certain control components and the general control features of a new nuclear power station, and of a hydro-electric power station (in collaboration with the University of the West Indies); dynamics of high-speed railway container cars; and new designs of reciprocating engines.

Work in progress in the development of new instrumentation for medical and surgical purposes ranges from the design of prototype instruments for extremely difficult operations on the spinal cord to final arrangements for production and marketing of a suturing instrument for blood vessels; the first activity is a collaborative one with the Montreal Neurological Institute and Queen's University, and the second is related to the licensing of a Montreal manufacturing firm.

Work continues on the industrial application of control theory — mechanical, electronic and fluidic, and the application of control system technique to animate beings. In particular, a considerable body of work has been accomplished in relation to the effects of microwaves on birds, and work relating to the possible supply of electrical control impulses to the muscular system of paralyzed people has begun. Conversely, progressively more detailed investigations are being made of biological control systems as possible models for better and more reliable engineering systems.

In order to establish an even closer liaison with Canadian firms and other organizations, the Division of Mechanical Engineering began in 1971 to set up some laboratories in Vancouver for this purpose.

The National Aeronautical Establishment conducts aeronautical research to meet the needs of military and civil aviation, working in co-operation with the Canadian aircraft industry. It studies problems of aerodynamics, aircraft structures and materials, and flight mechanics. It has the only development wind tunnel facilities in Canada and is equipped to handle most of the industrial or military aircraft developments of the foreseeable future. Aerodynamics research from low speeds up to about 17 times the speed of sound is carried out in the wind tunnels; considerable attention is being given at present to low-speed problems of vertical and short take-off aircraft. Other studies include work on the aerodynamic characteristics of high-thrust propellers, on wings with submerged fans and on wings immersed in powerful slip-streams. The research on structures and materials involves investigation of aircraft accidents, the theory of structures, fatigue and fracture, flight load statistics and aircraft hydraulics. The flight mechanics program covers research on flight safety and flying stability

and control, the development of a crash position indicator for locating crashed aircraft, atmospheric physics, and anti-submarine magnetometry.

A growing and highly diversified program of assistance to smaller industries is developing, the work relating mainly to product development, improvement or testing. Concerning aircraft utilization, efforts have been directed toward those areas of national activity where aerial methods might offer economies in cost or improvements in effectiveness, such as agricultural applications, forest fire fighting, aerial logging, high sensitivity magnetic surveys, precipitation physics, and studies of atmospheric turbulence.

The Radio and Electrical Engineering Division undertakes engineering projects of interest to Canadian industry and fundamental research in electrical science. The engineering program in the high-voltage field includes studies of corona loss and radio interference from direct-current transmission lines, and the development of current comparators for very accurate measurement of current and voltage ratios. An effort is being made to develop accurate tests of the lifetime of solid dielectrics used as insulation in high-voltage cables and components. The high-frequency laboratory is responsible for maintaining the national standards of RF power, voltage, impedance and attenuation and has recently participated in an international intercomparison of these standards. Assistance is given to industry in the design, production and evaluation of new equipment, and in the solution of such problems as the design of antennas and of microwave film and paper dryers and moisture sensors. Many devices are now in commercial production.

In the field of bio-medical engineering, new techniques in electrocardiography and echoencephalography have been developed, a study of cardiac stimulation thresholds is under way and instruments that will contribute toward the rehabilitation of handicapped persons have been produced. The Division has co-operated with members of the medical profession in the establishment of safety standards in the use of electronic equipment in hospitals for treatment and diagnosis.

Much of the research effort in the computer laboratories of the Division is concentrated on the problem of communication between man and computer. Computer graphics techniques have been adapted to provide a versatile tool for the film animator and for the composer of music. Problems arising in computer-aided learning systems are being investigated, and a touch-sensitive screen has been designed and patented, an extremely flexible input device that permits an untrained person to communicate effectively with a computer. Special data recording and analyzing systems have been developed to suit widely varying scientific programs.

Fundamental research is carried out in solid state physics, wave propagation, quantum electronics, and the behaviour of particles at ultra-high vacuum. Patents have been issued recently on a ruby laser which is self-Q-switched, and on a thermal transpiration vacuum pump.

The Astrophysics Branch of the Division is responsible for the operation of three major astronomical facilities, as well as a number of smaller observatories and observing stations throughout the country. Optical studies of stars and other celestial bodies are undertaken at the Dominion Astrophysical Observatory at Victoria, BC. The major instruments of this observatory are reflecting telescopes of 72-inch and 48-inch aperture equipped with powerful spectrographs. The Algonquin Radio Observatory in Ontario is equipped with a variety of instruments, the major one being a powerful 150-foot (46-meter) parabolic telescope. Facilities at the Dominion Radio Astrophysical Observatory in British Columbia include telescopes for low-frequency observations and for studies of neutral hydrogen in interstellar space.

Observations of radio solar emissions are made at both the Algonquin Radio Observatory and the Dominion Radio Astrophysical Observatory, and optical studies are carried out at the Ottawa River Solar Observatory near Ottawa. Other fields of research include the study of meteors and meteoric phenomena by optical and radar methods and from rockets and study of the physics of the upper atmosphere and the aurora.

The Space Research Facilities Branch develops and provides facilities to meet the needs of the upper atmosphere and space research programs of Canadian scientists in universities and government agencies. At present, its work is restricted primarily to the use of sounding rockets. The major launching site is the Churchill Research Range, a Canadian facility operated for the

benefit of both Canadian and foreign scientists. It has facilities for the launching of most types of sounding rockets and balloons carrying scientific experiments to investigate the earth's upper atmosphere. Associated ground-based instruments are available to study the aurora borealis by photographic and spectrophotometric methods. For occasional use, there is also a small launching facility at Resolute in the Northwest Territories, and a temporary facility was used at East Quoddy, NS, for studies of the solar eclipses of 1970 and 1972. An additional temporary site was used at Gillam, Man., for launchings in 1972 and 1973. The Branch also operates the Great Whale Geophysical Station at Poste-de-la-Baleine in Quebec, which records auroral phenomena for Canadian and United States scientists.

In the implementation of the sounding rocket program, the Branch is responsible for providing the vehicles and incorporating the scientific experiments into suitable payloads with associated telemetry and other devices; this work is carried out mainly by industrial contracts. The work of the Branch also includes the reduction of flight data to provide vehicle trajectory and attitude information to experimenters, and the provision, from the telemetered information recorded on magnetic tape, of data required by individual scientists in any form desired.

The Atlantic Regional Laboratory at Halifax in Nova Scotia is engaged in practical and fundamental studies in chemistry and biology related to the resources and industries of the Atlantic Provinces. Such studies include investigations of: the biochemistry and physiology of marine algae, fungi, bacteria, lichens, mosses and higher plants; the chemistry of naturally occurring organic compounds; and the physical chemistry of inorganic compounds at high temperatures. A major objective is to develop varieties of seaweeds with enhanced commercial value and to investigate the growth and cultivation of seaweeds and other marine algae. Surveys are being made to reveal new sources of seaweeds. An applied project on toxic microfungi in pastures is being carried out in collaboration with the Canada Department of Agriculture at Nappan, NS. Fundamental studies on inorganic reactions at high temperatures may be of value to the steel and glass-making industries, and research in organic reactions, which includes work on methods of synthesis, may also eventually have industrial value. Some of the work in biochemistry and physiology is related to medicinally important compounds such as antibiotics and drugs that affect mental processes.

The Prairie Regional Laboratory at Saskatoon, Sask., develops wider uses for crops grown on the Prairies. The laboratory program is carried out by five sections: physiology and biochemistry of fungi, physiology and biochemistry of bacteria, plant biochemistry, chemistry of natural products, and engineering and process development. Research is carried out on the properties and reactions of plant components, and on the biological, chemical and engineering processes for turning them into other compounds. The development of oil-seed crops as alternative crops has received considerable attention.

For some time, studies have been carried out on major plant constituents such as carbohydrates, protein, starch, lignin and fibres. An example of this work is the definition of the chemical structure of several polysaccharides found in cereal grains and important in baking, milling and fermentation technology. Attention is also being given to minor plant constituents, such as phenols, flavonoids and terpenes, which are known to have fungicidal and germicidal properties and facilities have been set up for the systematic study of extractives from local plants and shrubs.

Developments attracting commercial interest are: the production of feed supplements by direct use of micro-organisms, and specific essential amino acids such as lysine; poly-hydroxy alcohols such as glycerol and arabitol; hydroxy fatty acids; and the possibilities of producing specific glyceride types using the enzyme systems of micro-organisms. The laboratory works in co-operation with the Canada Department of Agriculture to help maintain Canada's position as the world's leading exporter of rapeseed, used to produce cooking oils, dressings and oil for use in margarine and shortening. A group working in the field of mycology is concerned with the production of new chemicals, antibiotics, alkaloids and amino acids.

9.2.1.3 University research support

From its inception, the National Research Council has encouraged and supported research in Canadian universities. A system of postgraduate scholarships and postdoctorate fellowships gives assistance to students, Canadians and landed immigrants who have shown promise of research ability. The awards are: Postdoctorate Fellowships; Industrial

Postdoctorate Fellowships; Postgraduate Scholarships; 1967 Science Scholarships; Postgraduate Scholarships in Science Librarianship and Documentation. Awards are for advanced studies and/or research in science and engineering and are competitive, with academic excellence being the main criterion in the selection of successful candidates. In addition, the Council in 1973 is to introduce an Industrial Cooperative Fellowship program.

Postdoctorate Fellowships and Industrial Postdoctorate Fellowships are awarded to candidates who have recently completed or who are about to complete their requirements for a doctorate degree. The purpose of the two programs is to enable those who have received a doctorate degree to undertake, prior to becoming permanently employed, postdoctoral research for up to two years after receiving their degree. Postdoctorate Fellowships are tenable, in Canada, in Canadian universities and with Provincial Research Councils and in universities and other institutions abroad; Industrial Postdoctorate Fellowships are tenable in industrial organizations in Canada. Postgraduate Scholarships are awarded for tenure in Canada and a successful candidate may elect to carry out his program at the Canadian university of his choice; however, where facilities for a PhD program are limited or lacking in Canada, the candidate may receive special permission to hold his scholarships at a university abroad.

The 1967 Science Scholarships, introduced to celebrate the centennial of Canadian Confederation and the 50th anniversary of NRC, are intended to encourage young men and women of outstanding intellectual promise to pursue postgraduate studies and research leading to doctorate degrees, as well as to stimulate exchanges of students between different cultural and geographical regions in Canada. Scholars must select for graduate studies a university in Canada other than the one from which their first degree was obtained.

Postgraduate Scholarships in Science Librarianship and Documentation, introduced in 1967, are intended to encourage graduates with a degree in science or engineering to become science librarians, documentalists or science information specialists in an effort to meet the demand by universities, research laboratories, industrial firms and related organizations for qualified persons in this field.

Industrial Cooperative Fellowships, to be introduced in 1973, are intended to provide opportunities for further training and experience for engineers and scientists currently in industry, and to improve communication at the university/industry interface by putting experienced industrial scientists and engineers in essentially university staff positions. The Fellowship is not intended to support a candidate where the sole purpose is to obtain a higher degree. It is expected that the work the Fellow undertakes will provide further training and research experience consistent with the interests and objectives of his company since the company will be sharing with the National Research Council in the cost of any award. It is also anticipated that in some cases the recipient of the Fellowship will bring to a university or laboratory valuable knowledge and experience that he may be prepared to share by conducting seminars and/or teaching.

9.2.1.4 Assistance to industry

The application of science to industry has been a major concern of NRC since its founding. There is a constant flow of personnel and information between NRC laboratories and those of industry, and roughly 70% of the Council's own effort involves applied research intended for industrial use. Contract research on specific projects and a variety of testing and standardization work are undertaken. Inventions from NRC laboratories are carried through the patent stage, then made available for manufacture through Canadian Patents and Development Limited, a subsidiary of NRC.

In an effort to improve the co-ordination of the various agencies of government concerned with administration of industrial assistance programs, a study group has been formed of the major participants, including the Department of Industry, Trade and Commerce, the Defence Research Board, the Department of Finance, the Treasury Board and NRC. This group is active in its efforts to devise improved incentive programs. Staff members of NRC have organized meetings with representatives of Canadian research management, and from these there is emerging a much clearer picture of the problems of industrial research and development in Canada.

Since 1962, the Industrial Research Assistance Program, administered by NRC, has provided almost \$67 million in funds in support of R&D projects involving a corresponding

expenditure by industry of over \$90 million. The number of projects funded during the year ended March 31, 1973 was 230, tenable in 157 companies. For the first time since the inception of the program in 1962 all provinces have benefited from the program since, as a result of continuing encouragement to companies, projects are being supported in Newfoundland and Prince Edward Island. The highest level of research activity continues to be in the chemical, electrical, pharmaceutical, and paper and allied products industries.

With the time interval between research discoveries and the appearance of an improved product in the marketplace measured in decades, it is too early to forecast the effect of the program on the Canadian economy. The rate of growth of the IRAP in the early stages was governed by a shortage of senior scientists and research engineers, time needed to build laboratories and the share of company funds available to match government assistance. Recent reports from participating companies reveal a considerable change with a substantial increase in staff, in the purchase of sophisticated research instruments and in capital expenditures which have more than doubled since the program started.

The number of small companies applying for IRAP assistance is growing rapidly and there are a number of case histories showing that small companies can do highly successful research and development with the appropriate incentives. A close working relationship has been effected between the industry group, some 90 university professors in a consulting capacity, and approximately 130 scientists as advisers or liaison officers from government laboratories. This new link between industry, university and government is improving communication and providing a feedback of industrial activities and requirements into the universities and government laboratories.

9.2.1.5 Technical information

The Technical Information Service (TIS) was established in 1945 to help small secondary manufacturing industries keep pace with advances in research and technology. TIS today maintains direct contact with industry through a system of field offices and provides, without cost, information and advice on technological matters.

The Industrial Engineering Section has nine industrial engineers in the field and three in Ottawa, helping small companies to resolve their operating problems on a do-it-yourself basis. This is done through information, guidance and assistance in the analysis of work situations, improvements in production processes and facilities, and implementation of systems by which management can operate and control production processes for optimum results.

The Technological Developments Section further facilitates the flow of technical information to Canadian industry. An experimental program is carried out with the co-operation of some 3,000 companies each of which has provided TIS with a listing of its areas of industrial interest; these are matched by computer with the information items held by the Technical Developments Section and selected lists are issued to each company.

Engineers in the TIS field offices visit or contact thousands of small companies in every part of Canada and answer well over 10,000 inquiries a year. Problems requiring information in greater depth are referred to the Ottawa staff who draw upon experience with previous inquiries, the National Science Library, experts in government departments and industry, and foreign information services for suitable information which is forwarded to the inquirer, sometimes accompanied by suggested solutions to their problems.

9.2.1.6 The National Science Library

Plans for developing a central scientific library were proposed as early as 1924 by the Honorary Advisory Council for Scientific and Industrial Research, established in 1916, now the National Research Council of Canada. The Library grew slowly until 1928 when temporary research laboratories were established near the present Sussex Drive building which was opened in 1932. Since then it has been developed to parallel the growth and expansion of the laboratories and the national interests and activities of the Council with the result that in 1953, under an agreement with the more recently established National Library, the National Research Council Library formally assumed responsibility for national library services in the fields of science and technology, a responsibility confirmed by Act of Parliament in 1966. In 1967, the President of the Association of Canadian Medical Colleges recommended to the government that responsibility for national services in the medical and health sciences be assigned to the National Science Library.

The National Science Library now serves as the focal point of a national scientific and technical information network. Through co-operative measures with both national and

international information agencies, its activities are designed to provide the Canadian scientific and industrial communities with direct and immediate access to resources and services not available locally. Increasing use is being made of computer and related electronic data processing equipment to organize, retrieve and expedite the dissemination of information. One such service is a selective dissemination of information (SDI) system available on a regular (weekly or bi-weekly) subscription basis to Canadian scientists and engineers. The Library's collection, which is doubling in size every ten years, constitutes one of the world's outstanding collections in its field. Most of this material, including journals and other serials, books, pamphlets and technical and research reports (many in microform), is housed in the main Library with smaller and more specialized collections in eight branch libraries.

The resources of the Library are made available by means of an extensive inter-library loan and photocopying service. This service also identifies references to obscure publications and, if necessary, attempts to locate holdings elsewhere in Canada or abroad. For purposes of current awareness, the Library issues twice a month its *Recent additions to the library*. The *Union list of scientific serials in Canadian libraries*, prepared by the Library with the co-operation of other libraries in Canada, records the title, holdings and location of approximately 40,000 scientific and technical journals received by over 230 libraries in Canada. The data for this publication are stored on magnetic tape and updated regularly for computer print-out as new editions are required.

Librarians trained in science or engineering and subject specialists provide a reference and research service to meet Canadian needs for information. To reply to many inquiries, a literature search must be carried out and a list of relevant references prepared. Other requests for information may be answered from the staff's own knowledge or with advice from the scientific and technical personnel of the Council and other government departments and agencies.

The *Canadian index of scientific translations*, a card index to the location in Canada or elsewhere of translations of articles written in foreign languages, is maintained by the Library. Translations of scientific articles prepared by the Library's Translations Section are listed and made available in Canada and abroad. A complete English translation of the Russian journal *Problemy severa (Problems of the north)* is also prepared by this Section. The National Science Library publishes the *Directory of Canadian scientific and technical periodicals*, *Conference proceedings in the health sciences*, *Scientific and technical societies of Canada*, *Scientific policy, research and development in Canada* (a bibliography), and other publications related to its own activities.

9.2.1.7 Associate committees

NRC's associate committees provide an important instrument for studying, co-ordinating and promoting research on problems of national significance. The members of these committees are experts in the different aspects and disciplines related to the problem and are drawn from university, industry and government laboratories. The committee studying a particular problem collects and collates the necessary information, delineates research problems, co-ordinates research and may initiate new research necessary to the solution of the problems. Each committee has defined objectives and when these are accomplished the committee is disbanded. Currently, more than 40 associate committees are operating in such diverse fields as aerodynamics, bird hazards to aircraft, protective coatings research, plasma physics, and soil and snow mechanics. Some associate committees also function as national committees for an international scientific union.

An Associate Committee on Scientific Criteria for Environmental Quality has been established by the Council to collate and publish an integrated set of scientific requirements on which an evaluation of the quality of the environment can be based. The criteria will be designed to assist those at the federal, provincial and municipal levels who are responsible for formulating and enforcing environmental quality standards. A more detailed account of the work of the Committee will be found in the description of the Division of Biological Sciences in preceding pages.

9.2.1.8 International relations

NRC maintains a scientific liaison office in London, England, for the exchange of information and maintains exchange programs with the Soviet Academy of Sciences (USSR);

France, as part of the Cultural Exchange Agreement and specifically with the Centre National de la Recherche Scientifique; the Conselho Nacional de Pesquisas de Brazil; and the Czechoslovak Academy of Sciences (Czechoslovakia). Under these programs arrangements are made to send Canadian scientists on short- and long-term visits to each of the above countries and to receive scientists from those countries for similar visits in Canada.

In co-operation with the Canadian International Development Agency, NRC has initiated a program of CIDA - NRC Research Associateships for scientists from developing countries. Awards under this program provide an opportunity for promising scientists to spend annually in Canada up to three months during a three-year period. During these visits the scientists will be associated with Canadian scientists who will guide and assist them with their research programs. Candidates under this program must be eligible for assistance under one of the programs of the Canadian International Development Agency.

In addition, NRC supports Canadian membership in organizations such as the International Council of Scientific Unions, helps to finance scientific congresses in Canada, and aids Canada's participation in world scientific meetings.

9.2.2 Atomic Energy of Canada Limited

At the present time an appreciable proportion of the world's estimated total fossil-fuel resources has been consumed by a comparatively small segment of the world's population. This rate of consumption is increasing, the increase reflecting not only population growth but also increasing per capita energy demands. The active exploitation of energy available from nuclear fission provides the only known, practicable means of reconciling the world's energy demand (present and projected) with available resources.

Canada's atomic energy program has maintained a significant position in the world's nuclear power community comparable with the major nuclear powers. Atomic Energy of Canada Limited has, in the development of the heavy-water-moderated power reactor concept, provided a nuclear power system whose simplicity of design and flexibility of fuelling requirements offer the prospect of abundant, low-cost electrical energy for the foreseeable future on a world-wide basis.

The unique position of Canadian CANDU (CANada-Deuterium-Uranium) power reactors in the world's nuclear power systems is the Canadian use of heavy water (deuterium oxide) as a moderator for slowing, or "moderating", the neutrons from nuclear fission to maintain the fission chain reaction. The high neutron economy obtained by using this moderator and employing neutron-transparent core materials (zirconium alloys) means that natural uranium may be used as fuel. The use of natural uranium in the CANDU system is incidental to the basic concept of neutron economy but its use at the moment has certain economical and political advantages and serves as a useful engineering design discipline. The user of a natural-uranium fuelled reactor system is not dependent on one of the very limited number of countries providing uranium enrichment services and is able, for a comparatively modest capital outlay, to establish a domestic fuel fabrication industry. This, together with the inherent simplicity of the technology of the CANDU reactor, makes it a particularly relevant system to those countries wishing to establish an indigenous nuclear industry.

The bulk of Canada's power reactor operating experience so far has come from three generating stations operating in Ontario. These — NPD (the Nuclear Power Demonstration station at Rolphoton), Douglas Point and Pickering — all use reactors cooled by pressurized heavy water (PHW), and in view of the Pickering station's performance it may be said that the CANDU-PHW option has been proved commercially viable. In Quebec, the operational record of the 250-MW prototypical Gentilly reactor has given good grounds for the belief that the second member of the CANDU "family", using ordinary water as coolant, will be equally successful. The incentive for developing the boiling light-water-cooled (BLW) CANDU is economic. By eliminating the heavy-water coolant and the hardware associated with a secondary coolant circuit, substantial capital cost savings may be realized and construction time (a major cost factor) may be reduced.

Development of a third coolant option in the CANDU series, organic liquid, offers the potential of higher operating temperatures (in the region of 400°C) and much easier maintenance. At the Whiteshell Nuclear Research Establishment an organic-cooled experimental reactor (WR-1) has been operating reliably for several years. Compared to water-cooled CANDUs, reactors cooled with organic liquid (a mixture of light oils) can

operate at higher temperatures and more moderate pressures. An additional (and unexpected) bonus is the fact that the organic coolant deposits minimal amounts of radio-active corrosion products on piping surfaces, so that most of the primary heat-transport circuit is readily accessible for maintenance. In the case of the WR-1 reactor, activity fields around the primary circuit are trivial, even when the reactor is operating at full power.

Power reactor development. The year 1972 saw the proving of the CANDU-PHW concept as a reliable and economically attractive energy source. All major technical questions affecting their viability, e.g., heavy-water losses, on-power fuelling and fuelling costs, have been satisfactorily answered. Equally important is the fact that Canadian industry has been proved capable of bringing such a complex project to fruition ahead of schedule. The reliability of the Pickering reactors in a non-routine situation was also convincingly demonstrated in 1972 when, after a lengthy shut-down due to a strike by Ontario Hydro employees, the three reactors were re-started and brought to full power without incident and with remarkable rapidity.

Pickering generation station is, however, merely the starting point for Ontario Hydro's nuclear-intensive energy program. Bruce, a four-unit, 3,000-MW PHW installation is scheduled for completion by 1979. Subsequent nuclear generating stations will continue to use the PHW system, probably until the late 1980s. A similar pattern, although starting later, is expected with Hydro-Quebec whose operating experience with the AECL-owned Gentilly BLW reactor is to be augmented by the construction of a 600-MW PHW installation on the same site.

With this in mind, it is apparent that a large part of AECL's power reactor development activities will be oriented to the support and enhancement of the PHW reactor. Evidence of this development will be seen in the Bruce generating station, whose design incorporates many evolutionary, rather than revolutionary, design changes. These are especially aimed at increasing the reliability of the conventional (as opposed to nuclear) components, such as pumps, seals and valves. Improvement in the thermal efficiency of the PHW will be realized by operating the heavy-water coolant in the near-nucleate boiling mode. In the period 1969-71 the Nuclear Power Demonstration reactor at Rolphton, Ont. was operated in this manner to provide data on hydrodynamic stability, reactor control, and corrosion effects of the boiling heavy-water coolant. This experimental work provides a good example of how AECL's research and development work is aimed "at a moving target" since results from the NPD investigations had particular relevance to the CANDU-BLW Gentilly project.

The major thrust in AECL's power reactor development is toward realizing capital cost reductions without compromising the basic CANDU concept of neutron economy. The BLW reactor, with its reduced heavy-water inventory, single-stage cooling and reduced construction time, represents a move in this direction. Further exploration of this concept could include use of plutonium-enriched fuel which, in a BLW, would enable considerably more power to be extracted per core unit volume. Not only would this offer substantial cost savings but it would provide an opportunity to utilize the plutonium contained in spent PHW fuel, thus effectively "stretching" Canadian uranium resources. A longer-term possibility is the employment of the thorium fuel cycle in conjunction with an organic coolant, and plutonium enrichment, or possibly a supply of neutrons from an external source.

Fuel development work at AECL is now aimed at first improving the existing uranium dioxide fuel to further increase its ability to withstand sudden reactor power fluctuations, and then at developing new, higher density fuels such as uranium silicide and alloys.

Heavy-water production remains, in many ways, the keystone to the growth of Canada's nuclear power program. The shut-down of the Douglas Point reactor in the summer of 1972, for decontamination and other maintenance work, together with the shut-down of NRU, one of three high-power experimental reactors, for a vessel change released sufficient heavy water to allow Pickering III to start up. This is indicative of the present short supply of this material. With the rehabilitation of Glace Bay (a 400-ton-per-year plant), the maturation of the Port Hawkesbury plant (400 tons per year) and the coming into service of the 800-ton-per-year Bruce plant (supplied with steam from the Douglas Point generating station) in 1973, the short-term heavy-water-supply problem should be relieved. If the hoped-for expansion of nuclear power in Canada (especially in Ontario) is to be realized, then further heavy-water production facilities should be committed in the near future. AECL regards heavy-water

production as the key to the commercial success of the CANDU system and is devoting considerable effort to rehabilitation of the Glace Bay plant, together with intensive development of the established generating station heavy-water production process, and then to active investigation of and experimentation with other possible extraction processes.

Fundamental research has always been, and must remain, the basis of AECL's development, and the major special tools for this research are the three high-power experimental reactors WR-1, NRU and NRX. Not only do these reactors have provision in their cores for the irradiation of materials over extended periods of time, but special isolated fuel channels, or loops, are provided for the in-reactor testing of different fuels and coolants — such testing being fundamental to prosecution of the Canadian power reactor program. Horizontal holes through the reactor shielding allow intense neutron beams to be directed to various experimental research facilities.

All three large reactors have undergone considerable change in the course of their operating history. NRX, with two calandria changes, entered its 25th year in 1972 and remains a vital research facility rather than a treasured museum-piece. At Whiteshell the organic-cooled WR-1 has undergone two major modifications. The original stainless steel fuel channels have been replaced with channels of Ozhennite-0.5, a zirconium alloy of greater neutron "transparency" which will permit a reduction in fuel enrichment and a 50% increase in neutron flux. In addition, the reactor core has been increased in size from 37 fuel sites to 54, the 17 new fuel channels being part of a third independent coolant circuit. A fourth in-reactor loop has also been installed.

It had been planned for some time to shut the NRU reactor down and carry out a vessel change, and in 1972 an opportunity to do this presented itself. By the end of the year the old reactor vessel had been successfully removed and preparations for installing the new one were well advanced. A most significant result of the NRU vessel change will be the addition of two further in-reactor loop positions.

Complementary to in-reactor experimentation, out-of-reactor loop tests can simulate the environment of a power reactor, apart from the radiation field. One of the major pieces of out-of-reactor test equipment is the freon loop, a large test rig designed specifically for investigation of the boiling water heat transfer and flow characteristics. With three full-sized test sections, the loop will provide realistic test facilities for any type of CANDU fuel configuration presently envisaged. The use of freon, with its low boiling point, as a modelling fluid to simulate water provides a considerable saving in both construction and power costs.

A further major research tool at the Chalk River Nuclear Laboratories (CRNL) in Ontario is the "MP" tandem Van de Graaff accelerator. Among its many uses are precise studies of the structure and excited states of heavy atomic nuclei. Data acquisition and analysis equipment associated with the accelerator is on-line to powerful data processing systems. In 1972 this machine was up-rated from 10 to 13 million volts and a new magnetic spectrometer was installed in one target position. These modifications will provide higher particle energies and considerably increase the machine's research potential.

AECL does not conduct an active research program on the question of fusion, but does maintain a watching brief on work being done in other laboratories. There is good reason to suppose that were a fusion reaction successfully maintained and safely contained, it might prove more profitable to use such a reaction as a neutron source for a CANDU fission system rather than as a power source on its own.

In the field of technical information the introduction of mechanized systems is progressing. The main CRNL Library, Canada's national repository of nuclear literature, has successfully introduced computer control of book circulation, periodical renewal and budgeting. Experimental operation of a computerized current awareness service has started, initially to serve AECL staff, but later to be extended on a national basis.

With the coming to maturity of the CANDU-PHW power reactor system an increasing load of development work is being handled by both CRNL and WNRE. Despite this, a high quality of active research has been maintained, as has collaboration with other laboratories in universities and research institutes in Canada and abroad.

Recently there has been growing public concern about pollution of the environment, even extrapolated to the development of nuclear power and the handling of radio-active wastes. For many years AECL has maintained an environmental research branch at the Chalk River Nuclear Laboratories and has been able to study the problems of radio-active waste

management in a secluded and special area. This area is on bedrock which forms a shallow basin with only one water outlet — a small stream — which is monitored to ensure that levels of radio-activity remain below those permissible for drinking water. Should such levels be approached the flow can be held back to increase the dilution, or alternatively, the whole stream can be processed.

Highly radio-active fission product residues including strontium-90 and cesium-137 were formed into glass blocks which were buried in this area in 1959; since that time the surrounding groundwater has been monitored. Activity levels have been found to be extremely low, giving good grounds for confidence in this method of managing certain high-level wastes. There is no reason to suppose that operation of CANDU power reactors will impose any significant radiological burden on the environment. Management of high-level solid wastes from power reactors is simplified by the fact that over a 35-year operating life a 1,000-MW(e) nuclear generating station will produce only as much spent fuel as could be safely contained in an Olympic-size swimming pool.

In order to obtain independent monitoring the Department of National Health and Welfare, many years ago, undertook responsibility for the radio-active monitoring of public water supplies, discharges into rivers, and the atmosphere.

Commercial activities. AECL's Commercial Products Division is responsible for marketing radio-isotopes produced at Chalk River. Radio-isotopes are increasingly being used in medicine (for diagnosis and therapy), agriculture, industry and pollution control, a trend which is expected to continue.

Well established as a world leader in the design of cancer therapy equipment, Commercial Products' most recent activities include the introduction of a new cobalt therapy machine known as the Brachytron, which can remotely locate up to three small cobalt-60 sources in body cavities for internal radiation therapy, and the development of a computerized treatment planning and therapy system. AECL Commercial Products is also embarking on a program to produce and market accelerators for cancer therapy.

Another activity of growing importance is the Commercial Products' trace-element analysis service. Employing neutron activation analysis, the service can identify elements and their quantities in submitted samples. This has particular application in the determination, for example, of various contaminants in food sources and human tissue.

Relations with other organizations. A strong feature of the Canadian organization for atomic energy is that the regulatory body, the Atomic Energy Control Board (AECB), is separate from the chief executive agency (AECL). This, however, does not preclude close working relations. The President of AECL is, ex officio, a member of the Control Board and AECL staff are members of several AECB advisory committees.

AECL shares with the Department of Industry, Trade and Commerce a desire to increase the participation of Canadian industry in the developing nuclear market and AECL's many overseas interests involve relationships with the Department of External Affairs and the Export Development Corporation.

While AECL does not make grants to universities, research contracts are negotiated in many cases where the university has the necessary facilities and expertise. Some 20 Canadian universities undertake such work for AECL. However, the close relations that have been built up with universities are mainly the result of personal contacts. During the summer, many graduates and undergraduates of Canadian universities work at AECL establishments. A number of professors also use AECL facilities for research projects, a service which, due to the demand, is now available through the year under the aegis (at CRNL) of the Experiments Advisory Committee, a joint universities and CRNL committee. It is also noteworthy that some 60 former AECL staff now hold staff positions at Canadian universities.

AECL has encouraged and fostered Canadian industrial participation in many aspects of its program, by the award of research and development contracts, and the employment of professional and consulting services. Development contracts have contributed materially in qualifying Canadian companies to supply services, materials and equipment to the exacting standards required in the nuclear industry. As a result, two Canadian companies are now established as qualified and competitive suppliers of nuclear fuels. In other cases, qualification results from trial orders, supported by the provision of a prototype or samples, specifications and assistance from the laboratories and technical staff.

International relations. The study of nuclear energy has prompted more free exchange of information and co-operation between countries of differing political systems than any other field of endeavour. Canada is no exception to this rule. Many irradiations in the NRX, NRU and WR-1 reactors have been made for several countries, at their expense or on a shared-cost basis.

In exchange for information on the Canadian power reactor program, the US has carried out an agreed research program in support of AECL's work. Technical meetings and the exchange of reports have maintained contact between the UK steam generating heavy-water power reactor project and the Canadian program. Italian relations have been strengthened and put on a more formal basis with the maintenance at CRNL of a full-time Italian Liaison Office.

Close relationships also exist between AECL and the Department of Atomic Energy in India, the first Canadian-designed research reactor to be built outside Canada being built near Bombay in a co-operative program, partly supported by the Colombo Plan. AECL also designed India's first heavy-water nuclear power station, the Rajasthan Atomic Power Project, now nearing completion under a co-operative program.

Additionally, formal arrangements for information exchange have been established with Australia, France, the Federal Republic of Germany, Japan, Romania, Spain, Sweden, Switzerland and the Soviet Union.

AECL is represented on numerous international organizations and committees. Its Senior Vice-President (Science) represents Canada on the United Nations Scientific Advisory Committee to the Secretary General, and is also a member of the International Atomic Energy Agency (IAEA) Scientific Advisory Committee. Canada is a member of the Board of Governors of the IAEA and participates in advisory panels, conferences and symposia arranged by this organization, and also plays an important part in the development of the International Nuclear Information System (INIS), which is providing a worldwide nuclear information service. Canada is a major participant in the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) as well as other ad hoc United Nations committees. AECL also contributes to the activities of the International Nuclear Data Committee, the OECD Nuclear Energy Agency and the International Council of Scientific Unions.

To sum up, since Rutherford's exploratory work forty years ago, nuclear science, and the exploitation of nuclear energy, have both advanced at a very rapid rate. A vivid illustration of the rate of progress is provided by the recent history of the CANDU-PHW power reactor. From a 25-MW(e) demonstration plant, becoming critical in 1962 (NPD), there was an eightfold increase to the 200-MW(e) Douglas Point reactor, critical in 1965. A 250% increase in capacity was represented by each of Pickering's 500-MW(e) units (first unit critical 1971). A further 50% increase will be seen when the first of the Bruce station's 750-MW(e) reactors starts up in 1976.

9.2.3 Department of Energy, Mines and Resources

The objective of the Department of Energy, Mines and Resources is to ensure the full and effective use of Canada's energy and mineral resources for the benefit of all Canadians. Its mandate encompasses the development, co-ordination and implementation of federal policy governing energy and mineral resources and the carrying out of research to obtain the scientific, technical and economic information basic to the making of such policy. The Department comprises three sectors – energy development, mineral development, and science and technology.

9.2.3.1 Energy development

The tremendous growth in energy consumption in the world's industrialized nations and the increasing awareness that Canada's energy resources constitute a precious and not inexhaustible patrimony whose use must be carefully planned and regulated have given new weight and responsibility to the Department's Energy Development Sector. Its functions are reviewed in greater detail in Chapters 12 and 13.

9.2.3.2 Mineral development

The Mineral Resources Branch identifies and evaluates trends affecting Canada's mineral industry by studying the entire mineral industry from geologist to user – exploration and development, processing, transportation, marketing and consumption. The information

provides a basis for decisions to be taken within the Department and contributes to the development of resource policies. It carries out the administration of the Emergency Gold Mining Assistance Act; advises and participates in the programs of several other federal departments and task forces; represents the Department on several national and international committees; and co-ordinates the Department's foreign aid activities with the Canadian International Development Agency.

9.2.3.3 Science and technology

The Science and Technology Sector carries out a broad range of scientific research pertaining to the earth sciences — geodesy, geology, geophysics, mineralogy, metallurgy and geography. The Sector comprises, in addition to the Surveys and Mapping Branch whose functions are described in Chapter 1, the Geological Survey of Canada, the Mines Branch, the Earth Physics Branch, the Polar Continental Shelf Project and the Canada Centre for Remote Sensing.

The Geological Survey of Canada provides a systematic knowledge of the geology, mineral and fuel resources of the country and assists in the effective use and conservation of resources, and in the management and preservation of man's environment throughout Canada. Continuing research projects, especially those involving a major component of laboratory work, have given rise to the establishment of teams with unique capabilities in such areas as mass-spectroscopy and isotope dating, including: the development of instrumentation and continuing refinement of techniques in support of field research; geochemistry, especially projects in which new field techniques have been developed; biogeochemistry, involving geology, geochemistry and botany; clay mineralogy; and various geophysical projects, especially in the development of remote sensing devices. Research tools and systems that have been developed include: high resolution aeromagnetic survey systems; ground gamma-ray spectrometry; development of airborne gamma-ray spectrometry for the search for radio-active minerals; practical methods of field geochemistry for prospecting; field methods for detection of Radon-222 in streams and sediments to outline uranium-bearing areas; and a method of tracing mineral trains in glacial deposits back to source as an aid to prospecting. In addition, the Geological Survey has led the world in rapid reconnaissance geological mapping using helicopters and other aircraft, especially in the field techniques developed and applied to the mapping of the arctic regions.

The Mines Branch is an interdisciplinary applied science institution engaged in research in non-renewable mineral resources and metals. Its facilities include a Mining Research Centre which carries out research on such problems as stability of underground and open-pit mines, methods of rock breakage, problems of environmental engineering and methods of obtaining maximum performance in mining operations. The Branch's general objective is to provide leadership in ensuring a sound scientific base for new technology and in stimulating the application of advanced technology to the extraction, processing and use of minerals and fuels in Canada and in the improvement of metal products. Specifically, it aims to improve the efficiency of the mining, processing and use of mineral resources and of metals and alloys; to improve the recovery of low-grade mineral resources and to minimize waste; to recognize problems in industry and undertake research, or give advice, on methods of solving these problems; to predict shortages and substitutions from technological market trends and to undertake research on mineral resources of potential value. It plans its activities in terms of its mission-oriented research, conducting basic research only when purely scientific data are required for technological purposes. As a corollary, the Branch has had to build up some facilities to support its specialized activities, such as facilities for the carbonization of coal, the study of corrosion, and for pilot-scale mineral processing and foundry investigations.

The Earth Physics Branch investigates the magnetic, gravity and seismic characteristics of the earth as a whole and of the Canadian land mass in particular. It utilizes the results of its research and of the research done elsewhere to obtain new and more detailed knowledge of the Canadian land mass, leading to improved magnetic and gravity charts, knowledge of earthquake hazards and detection of underground nuclear explosions. Some major programs are: studies on the properties and characteristics of the earth's crust and deep interior; study of the magnetic field in Canada and its variations, both to aid navigation and to investigate the ancient history of the earth; and study of variations in the gravitational field in Canada, relating this to the shape of the earth and to problems in accurate surveying. The Branch is

concerned with the recovery of meteorites and investigation of meteorite craters. Branch scientists conducted the world's first systematic search for ancient meteorite craters using air photographs, maps and other information. Sixteen impact sites have been identified in Canada and a greater number of possible sites are under investigation. These investigations have been distinguished by the broad approach taken to the problems of crater identification and analysis; gravity, magnetic, seismic, resistivity, structural, topographic and petrographic methods have all been employed; even more important has been the pioneering use of continuous diamond drilling to investigate the deep zones of a number of craters.

The knowledge so gained has application to the nature, origin and abundance of meteorites and to the history of the more stable parts of the earth's crust. The analysis of field and laboratory observations, coupled with pertinent experiments, has led to a better understanding of the dynamic properties of the earth's crust and the nature of its response to high-energy shock pulses. These results have application to the field of rock mechanics and to the contemplated use of nuclear explosions for large excavations and are of significance to the mining and oil and gas industries because large impact structures have sometimes formed or controlled the distribution of deposits of economic importance.

The Polar Continental Shelf Project has been undertaken to increase the scientific and technical knowledge about the arctic regions of Canada. It provides the means for integrating or co-ordinating arctic investigations and, by developing specialized knowledge and experience in technology, logistics, communication and human problems and making such facilities and knowledge available to responsible organizations, it promotes effective scientific and technical work in the arctic regions. The project works directly with other branches of the Department in planning and carrying out an integrated program of arctic research and survey; it conducts independent investigations to obtain information of basic importance about arctic phenomena, resources or conditions; and it co-operates with other government departments and agencies and with universities to provide expertise and facilities for arctic studies. Major programs, most of which are undertaken in co-operation with other departmental branches or agencies, include: aeromagnetic surveys of arctic regions and preparation of aeromagnetic maps; geodetic and topographic surveys of arctic regions to improve surveying techniques and knowledge of glaciology; investigation of marine geology of the arctic continental shelf and continental slope; investigation of terrestrial geology of arctic regions; hydrographic survey of the arctic continental shelf and slope; and oceanographic survey of arctic waters near the continent.

The Canada Centre for Remote Sensing is the newest branch of the Department of Energy, Mines and Resources. It has been set up to supervise and co-ordinate airborne and satellite remote sensing in Canada, and to carry out or encourage research in remote-sensing technology and interpretation.

The sensors now being used are mainly of two types: photographic cameras using a variety of special films, including infra-red; and line scanners that operate somewhat like television cameras and are mounted in an orbiting satellite. The Centre has at its disposal a number of aircraft to respond to requests for remote-sensing surveys from federal, provincial and private research agencies. It has also entered into a contract with the US National Aeronautics and Space Administration (NASA) to receive imagery of Canadian territory from NASA satellites. The first of these satellites, the Earth Resources Technology Satellite A (ERTS-A) designed especially to scan the surface of the earth and to catalogue its resources, was launched in July 1972. It orbits the earth at an altitude of approximately 500 miles, the orbits shifting to follow the sun.

Remote-sensing imagery is capable of giving a quick and — in the case of satellites — constantly updated overview of forest cover, snow cover and snow melting, movement of sea ice, the condition of ocean water, urbanization, land use, etc. It is a novel and exciting tool for those charged with planning the orderly development and conservation of Canada's resources.

9.2.4 Department of the Environment

9.2.4.1 Meteorological research

The federal agency responsible for meteorological research is the Atmospheric Environment Service (AES) of the Department of the Environment. Capital, operating and maintenance funds for research and development allotted to the Atmospheric Environment

Service for the year ended March 31, 1972, amounted to \$4.5 million. In addition, assistance in the form of grants and contracts in the field of meteorology carried out by Canadian universities amounted to about \$386,000.

The AES provides consultation, advice and information on the effects of weather and climate on a wide range of activities such as water resource management, agriculture, forestry, transportation, communications, industry, construction, air pollution control, aviation, tourism and recreation. In the field of hydrometeorology, which involves that portion of the hydrologic cycle which is affected by or which affects the atmosphere, the main processes of interest are precipitation, energy exchange and evaporation. Specialized studies are carried out on storms, meteorology of lakes and rivers and the water balance of the natural environment. Many of these are of a co-operative, interdisciplinary and interagency nature, some in connection with international programs and others in relation to flood and water supply forecasting.

Climatic analyses and studies in support of natural resources, arctic exploration and development, industry and commerce are conducted within the Service itself, by the assignment of personnel to other agencies, through co-operative programs, or through contracts. Arctic studies are made in support of oil and mineral exploration, pipeline construction, the selection of airports, town and mining sites, the design and operation of communication systems, transportation and operations in severe cold weather. Topoclimatological studies, using mobile and stationary sensors, are a basis for optimum land use in fruit production and town planning; engineering studies are undertaken in support of the construction industry and analyses are used in the National Building Code; and an ice accretion climatology is being developed to aid in the design of support towers.

Atmospheric processes research. Progress continues in theoretical meteorology by using the basic dynamic and thermodynamic equations in conjunction with large computers. Topics studied include: energetics of atmospheric circulations; modes of development in extratropical and tropical cyclones; influence of moisture exchanges on the synoptic circulation; and new physical and mathematical modes for studying and forecasting circulation patterns.

Studies of atmospheric motions ranging from about one mile horizontally up to about 100 miles (mesometeorology) are of great importance in local weather variability and are of basic importance for air pollution control.

The study of radiation, both solar and terrestrial, is of fundamental importance in respect to atmospheric energetics and information on radiation is of great value in many human activities. Research programs include: basic properties of radiation instrumentation, their design and standardization by international comparisons; development and use of radiometersondes for measuring radiational variation with height; and use of radiation data for a number of applications including atmospheric dynamics, agriculture, and construction.

The atmosphere above 30 km contains only 1% of the earth's atmosphere but the nature and extent of the interaction, both physical and dynamic, between this region and the underlying atmosphere require examination. The coupling mechanisms, through circulation and radiative processes, require study both from the viewpoint of downward energy propagation and climatic modification, and upward in relation to radio communication and flight through these regions. Studies include: the measurement of ozone in the atmosphere both from ground-base systems and by Nimbus 4 Ozone Experiment Data Evaluation. Nimbus 4 was successfully launched from Vandenberg Air Force Base on April 18, 1970. The satellite has a near-circular orbit at 1,100 km above the earth and is close to the local noon/local midnight meridian. Backscattered ultraviolet instrumentation is used in the evaluation. High-level ozone profiles for the region above the main ozone maximum have been evaluated for over 30 orbits.

Air quality research includes the development of an air pollution climatology for Canada, experimental plume-rise studies, urban and regional multiple source dispersion, wind-tunnel modelling, visibility trends in Canada and the development of air quality indices, studies of the effects of pollution on climate and studies of urban meteorology.

Important additions to the research programs in air quality are environmental impact studies for existing and proposed industrial sites. In the past year, these special short-term investigations have taken on great importance as a result of the growing public concern about

the environmental impact of both industry and modification to established facilities and as a result of the growing realization of the importance of meteorological factors in determining the effects of pollutant emissions on air quality.

Within the next year, as part of a commitment to the World Meteorological Organization's global monitoring network, three baseline stations at remote Arctic and oceanic sites and seven regional stations at rural locations will be established. In addition, a national network of urban reference stations, one for each large city, will be established over the next five years. The observational program will include not only the standard meteorological elements but also precision measurements of the concentrations of various particulate and gaseous pollutants, the chemical constituents of precipitation, turbidity and the downward components of radiation. Special air pollution research networks will also be operated from time to time for testing physical and numerical models. In this connection, the co-operation of the provinces will be sought to exchange suitable data.

Environmental research. Research studies on cloud and precipitation mechanisms were continued, partly to increase knowledge in this field but also with the objective of discovering possible modification techniques. These studies have strong implications for economic benefits as more and more successful modification techniques are discovered. Experimental seeding of hailstorms in Alberta in 1972 produced encouraging results, as did local experiments on the dispersal of fog such as that which hampers transportation at airports and on inland marine routes. Basic studies on the mechanisms of cloud formation and precipitation development were also continued with an eye to possible rainfall augmentation techniques.

Field and laboratory studies continued on means of identifying, locating and tracking lightning-producing storms, the aim being to assist forestry interests to combat forest fires and to assist other agencies where precautionary measures would result in significant savings either to persons or property.

Work continued on increasing the effectiveness of radar to observe and differentiate storm details. Equipment and techniques were developed and improved to calibrate, record and archive weather radar observations for effective use as a "radar rain-gauge". Other studies involved the measurement of atmospheric electricity variables and studies of their correlation with meteorologic phenomena, also laser/radar applications to meteorology.

Theoretical study was made of the effect of atmospheric parameters on the occurrence and extent of the sonic boom generated by aircraft flying supersonically.

Work continued on improving the performance of the lysimeter. A successfully modified soil moisture control system was designed and installed. In order to operate the lysimeter in severe winter conditions, a device was developed and installed to prevent ice formation and snow accumulation in the gap between the lysimeter and the retaining wall.

In a co-operative research program with the Ontario Ministry of Agriculture and Food in connection with frost protection of vineyards, frequency and strength of inversions at three sites in the Niagara Peninsula were continuously measured. Experiments were also conducted to bring down warm air from aloft using helicopters to stir the air at a height of about 75-100 ft.

Work was carried out on evaporation from sunken and non-sunken class A pans to determine their energy components in order to arrive at the most important meteorological parameters for reduction of data to open water evaporation.

Hydrometeorological studies contribute to greater efficiency in the design and operation of dams, sewer systems and other water control structures; improved forecasting of lake and river levels, floods, water supply and irrigation requirements; and more efficient design and operation of hydro-electric power developments. Work continued on improving estimates of the distributions of precipitation, evapotranspiration and snowpack water content using surface instrumentation and remote sensing techniques. Progress was made in the development of mathematical models of water balances and energy balances involving meteorological data and hydrological applications. Efforts were directed to studying the effects of man on the hydrologic cycle and the resultant spectrum of water-related environmental management problems. Much of this work was carried out in support of federal-provincial projects and the International Hydrological Decade.

Studies of atmospheric processes in the earth's atmosphere boundary layer, that layer of the atmosphere from the surface up to a few thousand feet, are of importance in such fields as agriculture, forestry, oceanography, weather forecasting, etc. Study topics include: wind and

turbulence in the surface boundary layer; turbulent fluxes of momentum, heat and moisture; radiation and surface energy balance; and temperature and humidity microstructure. A major program was carried out to investigate the interaction of the atmosphere and Lake Ontario by measuring the evaporation and heat flux from or onto the lake and the wind drag on the lake surface. A highly instrumented jet aircraft was used to extend the level of observations up to 1,000 ft and over the whole lake. The results will be useful in incorporating the lake effects into forecasting models.

Meteorological services research. A rapidly expanding program of applied research, including some more fundamental aspects where necessary, is grouped together in the Meteorological Services Research Branch in order to provide support for the expansion and improvement of forecast services of the AES.

Centralized aspects of the forecast system, carried out at the Canadian Meteorological Centre, receive support through a program of research and development in numerical-dynamical weather prediction using a very large computer to simulate atmospheric behaviour. Improvements are being made based on advances in dynamic, computational and occasionally quasi-empirical techniques. International effort in this area is being strongly influenced by the Canadian program.

Research and development to improve and automate the regional and local operations of the forecasting system is being intensively pursued. New forecasting operations are being investigated including systems for predicting air pollution potential, ice in navigable waters, forest fire hazards, avalanches and wind-waves.

Observational systems and data problems relating to improvement of the forecast system are continually being studied and evaluated. The work in this area touches on many basic questions that the Service must answer which means that a high degree of co-ordinated effort is necessary. For example, in one area, remote sensing satellite meteorology will have a very strong impact on the whole question of the quality and make-up of the atmospheric data base which, in turn, is related directly to the efficiency and effectiveness of the forecasting system.

Instrument research and development. The gathering of quantitative atmospheric data is a basic requirement for knowledge of the past and present, and prediction of the future weather. To accomplish this, instrumental measurements of the atmospheric variables are taken at 2,500 representative surface locations in Canada and the vertical structure of the atmosphere is probed to 100,000 ft at a network of 36 stations by means of rawinsonde balloon ascents. In all, approximately 50 different types of instruments and instrument systems are used in operational measurements and a number of other types in specialized investigations.

Continuing research and development is directed at improving existing measurements as well as in testing instruments to meet new needs. Some of the more noticeable areas where effort is expended are described here.

A family of automatic weather stations designed for great flexibility of application has been developed. These stations are now being used in a network of teletype reporting stations, in mountain stations for use in hydrological measurements, for reporting coastal winds by radio and on an experiment as recording stations for remote operation in the deep Arctic. The Earth Resources Technology satellite (ERTS) is also being used experimentally as a communication channel for one of these stations.

The development of ancillary processing equipment for use with weather radar is well advanced. The equipment under test involves a system controlled by a mini-computer which accepts the input from a C-Band weather radar. This radar is programmed to scan a horizontal volume of air of approximately 10,000 sq miles in area centred on the station to a depth of 30,000 ft above the surface. The computer sorts out the returns from the radar and issues a quantitative cross-sectional map of precipitation intensity of four levels from 5,000 to 30,000 ft superimposed on an area map. This information may be transmitted in approximately real time by telephone circuits for the information of a variety of users such as weather forecasters, hydrologists, etc.

Experimental prototypes of an acoustic radar have been successfully tested and further development toward operational equipment is started. This equipment, termed SODAR, transmits a pulse of acoustic energy upward and the sonic back-scatter from small temperature irregularities in the atmosphere is detected and graphically depicted. The ultimate use which is visualized for this equipment is to provide a continuous indication of the stability structure of

the lower levels of the atmosphere for possible use in the control and prediction of atmospheric pollution accumulation.

An investigation has been carried out to determine the practicality of a single ended back-scatter fog detector as a general visibility device for use at automatic weather stations. The purpose of the investigation is to determine the validity of the manufacturer's calibration and claims with respect to different obscuration.

The handling of large quantities of data quickly is only feasible by means of computers. Investigations are under way to determine the techniques involved in moving the sensor outputs directly and automatically into the computer, thus eliminating the present intermediate handling and processing steps which may involve manual operations or complex analogue devices.

9.2.4.2 Forestry research

The responsibility of the federal government for forestry research and development is defined and established by the Forestry Development and Research Act (1966) and the Department of the Environment Act (1970).

The primary federal organization concerned with forestry is the Canadian Forestry Service of the Department of the Environment. Within the Canadian Forestry Service there are six regional forest research centres, six forest research institutes, two forest products laboratories, and one independently operating forest experiment station. Collectively, these establishments undertake research and operations either on a regional or a national basis. The program of the Canadian Forestry Service includes forest resource research, development and services; forest products research, development and services; aid to universities; and special assignments.

Forest resource research. The work undertaken in this category covers research, surveys and related services pertaining to forest land and soils; forest inventory and mensuration; silviculture and tree biology; timber harvesting; protection against fire, insects and diseases; and forest economics.

Research is proceeding on methods of combining forest land and forest inventory data to achieve improved forest and environmental management. An important part of this work is conducted under a co-operative program of watershed research in Alberta. In forest-soils research, programs dealt with include soil chemistry, soil biology and the hydrologic characteristics of watersheds but, currently, considerable emphasis is being given to forest fertilization and related mineral-nutrition studies.

Considerable attention is devoted to large-scale aerial photography; ultra-small-scale, high-altitude aerial photography and satellite imagery in developing improved methods for taking forest inventory and mapping vegetation. A large operational task that has followed from aspects of this work has been the mapping of vegetation in the 1,000-mile-long Mackenzie Transportation Corridor. Evaluation of imagery from the ERTS is currently a priority research program. Studies of growth and yield, the evaluation of site potential, and the development of mathematical models for trees and forests are continuing to provide valuable information for reforestation operations and for forest management.

A substantial portion of the research program in silviculture involves the study of factors responsible for the success or failure of natural regeneration following various methods of cutting and treatment of seedbeds; the development of improved methods of regenerating forest stands following logging or fire; and the establishment of forests on abandoned farmland, heathland or bogland. Different methods of seeding and planting are being compared, and increased emphasis is being given to problems associated with container planting. The effects of mechanization of logging on reproduction and on slash and soil conditions are being investigated. Studies of different methods of stand-tending such as pruning, cleaning and thinning are under way to determine means of increasing both quantity and quality of wood production. Investigations of successional changes are in progress in most of the important forest types, and the relation of forest growth to site is being studied with a view to the assessment of long-term productivity. The light, temperature and moisture conditions required to produce optimum growth and development of various tree seedlings are being determined to provide guidelines for improved forestry practices. Tree breeding studies include research on the pattern of genetic variation throughout the distribution range of several commercially important species to identify, select or develop superior strains. The

ecological impact of a variety of forestry practices is also under study with a view to producing environmentally sound management patterns for the nation's forests.

Research on timber harvesting has been intensified by work conducted within the logging development program of the Forest Management Institute. The objective of this work is to improve logging productivity and reduce the cost of wood delivered from the standing forest to the consuming mills.

Adequate protection of forests against fire is of vital importance in Canada. The Service works in full co-operation with provincial forest services in almost all phases of forest fire control and has made major contributions in the fields of forest fire danger measurement and forecasting and in fire control planning. Investigations are being made of forest fire behaviour, of the use of prescribed fire for hazard reduction and seedbed preparation, of better methods of reporting forest fires, and of fire damage appraisal and related factors in forest protection standards. Studies are being continued in the use of chemicals for fire suppression and pre-suppression, of fire-fighting equipment and techniques, and of the use of aircraft in forest fire control. Another important field of endeavour is the study of fire hazard created by slash from various kinds of logging practices for different species.

Research on forest insects and diseases is conducted at Service research centres and field stations throughout Canada. A Canada-wide survey is undertaken in co-operation with the provincial forest services and forest industries to maintain an annual census of forest insect and disease conditions and to detect and predict the occurrence of outbreaks. Survey results are made available to owners and operators of forest lands for use in planning salvage programs and directing control measures to reduce damage.

Experiments are also carried out in insect and disease control, utilizing cultural techniques, chemicals and biological control agents including parasites, predators and insect pathogens. Technical advisory services are provided in evaluating quarantine programs, possibilities of eradication or control, or other applications of research results. Examples include recommendations for reduction of seedling losses in forest tree nurseries through cultural techniques and chemical applications; the co-operative organization of cull surveys to improve forest inventories; consultation and advisory services for local authorities on the Dutch elm disease problem; and technical co-operation with provincial governments and industrial agencies in the organization of spraying operations. Of particular significance in the summer of 1972 were the large-scale chemical control operations covering about 6.8 million acres of forest land infested with spruce budworm in the Maritimes, Quebec and Ontario areas. In addition, 425,000 acres on Anticosti Island were treated against hemlock looper.

Research programs are designed to lead to comprehensive understanding of the biology and ecology of the more destructive forest insects and fungi, and the causes of fluctuations in abundance or severity of damage in time and place. Problems under intensive study include insect defoliators, leaf diseases, sucking insects, dwarf mistletoe, stem cankers, bark- and wood-boring beetles, trunk and root decays, tip- and root-boring insects, and diseases of tree seedlings in forest nurseries. Problems of national importance in insect pathology, cytology and genetics, bio-climatology and chemical control are investigated.

Current forest economics research is concentrated on studies of future supply and demand; assessment of the impact of forest resources and forest industry on local, regional and national economies; and the evaluation of quantifiable and non-quantifiable benefits which flow from the forest. Specific projects include those covering the compilation and assessment of forest inventory data on a national basis, investigations on potential forest products trade, trends of wood use in residential construction, the implication of pollution control measures for forest industries, and the development of methods for predicting lumber prices.

Forest products research. This work is directed toward obtaining background data on the properties of Canadian woods, developing new and better uses for wood products, improving methods of processing, effecting more complete utilization of wood substances, and reducing the pollution of air, water and land which may result from the operation of forest industries. Activities cover all major aspects of forest products and include: the determination of the physical, mechanical, chemical and anatomical properties of wood and their relation to adaptability in use; studies of factors affecting quality of wood and of manufactured wood products; determination of factors that cause wood waste in logging and manufacturing; investigation into fire retardant treatments, the preservative treatment and painting of wood and the use of wood for the manufacture of a variety of products by chemical or mechanical

means; and studies to determine possible new economic and more valuable uses for woods and to determine methods for the economical utilization of all wood substances available from the annual timber harvest.

The program is conducted mainly at two laboratories located in Ottawa and Vancouver, with research units covering timber engineering, containers, glues and gluing, veneer and plywood, timber physics, wood chemistry, pulping, wood preservation, paints and coatings, wood pathology, products entomology, wood anatomy, lumber manufacture and lumber seasoning. Research results are made available to the thousands of plants comprising Canada's timber-manufacturing and wood-using industries. Liaison is maintained with these industries to ensure that the research being conducted is of optimum national benefit. There is also constant co-operation with various government units in conducting many investigations concerned with wood use. Research into the use of wood in housing construction and as an engineered material continues in co-operation with the National Research Council and the Central Mortgage and Housing Corporation.

Through the medium of research contracts awarded to industry, provincial research councils, universities and others, a program has been established to abate pollution caused by the pulp and paper industry. The objective is to find cheaper and better methods for reducing the amount of suspended solids, dissolved wood substances and harmful chemicals released into receiving waters.

A number of regional establishments have forest products liaison officers who visit sawmills and other wood-working plants to keep industry aware of research developments and technical advances and to ensure that the Service is informed of field problems on which research would be of value.

Continuing research on the economics of forest products covers a survey of lumber and wood-based panel products utilized in residential dwellings, together with a study of possible future markets for lumber and plywood.

Service personnel serve on many national and international technical committees concerned with forestry problems, and continuous collaboration is maintained with forest products laboratories in other countries for the dual purpose of exchanging information and avoiding duplication of research.

Aid to universities. Operating grants are made to the forestry schools at the University of New Brunswick, Université Laval, the University of Toronto and the University of British Columbia to support research by faculty members and postgraduate students. In addition, extramural research grants are made to Canadian universities and other agencies, such as provincial research councils, to conduct forestry research of interest to the Canadian Forestry Service.

Special assignments. From time to time the Service contributes to priority studies which are specially directed, co-ordinated and funded. The Mackenzie Transportation Corridor Study is an example.

9.2.4.3 Fisheries research

The Fisheries Research Board of Canada was established to conduct basic and applied research on Canada's living aquatic resources, their environment and their utilization. Its antecedents go back to 1898 as it is the lineal descendant of the Biological Board, one of the oldest government-supported research organizations under the supervision of an independent scientific board in North America.

The Board is under the jurisdiction of the Minister of the Environment and consists of a permanent chairman, who is appointed by the Governor in Council and is a member of the Public Service of Canada, and not more than 18 other members holding honorary appointments from the Minister of Fisheries for five-year terms. The Act requires that a majority of the members of the Board, not including the chairman, shall be scientists, and the remaining members shall be representative of the Department (of the Environment) and the fishing industry. The scientific members are drawn principally from universities and research foundations across Canada, to include specialists in disciplines related to the Board's work. The industry members are selected from among Canada's leading businessmen with an intimate knowledge of fishing and the fishing industry, and the Fisheries and Marine Service of the Department of the Environment representative is usually a senior staff member in Ottawa. Board members have both advisory and executive functions. The advisory functions

are delegated to regional advisory committees who conduct on-the-spot regional reviews and report to the Board on the operations and scientific programs with a view to their improvement. The executive functions are delegated to an executive committee elected from Board members and approved by the Minister.

The Board's operations are decentralized with only a small administrative, supervisory and publications staff in Ottawa. The responsibilities of the Ottawa office include planning and program co-ordination and administration of a grant program to encourage university research in the fields of marine and aquatic science.

The commercial and recreational fisheries program is designed to add to fundamental knowledge concerning Canada's vast living marine and freshwater resources. Included are life history, population and behaviour studies leading to a sound scientific basis for the conservation and management of the commercially important fisheries including those for lobsters, crabs, shrimps, oysters, scallops, clams, marine mammals and other economically important aquatic species, such as salmon, cod, herring and halibut, as well as some marine plants, such as phytoplankton and seaweeds. Also included are studies in fish and shellfish diseases, fish predators and such basic studies as fish genetics, physiology and behaviour, the latter with a view to improving fish cultural and farming methods and also to improving fish farm and hatchery stocks. In addition to these basic studies, new fishing grounds and new species for exploitation are sought and experiments in improving fishing methods are undertaken.

On the Atlantic Coast this work is conducted out of research stations in St. Andrews, NB, and St. John's, Nfld.; work on arctic fisheries and on sea mammals is directed from a laboratory in Ste-Anne-de-Bellevue, Que.; freshwater work is carried out from a station in Winnipeg, Man.; and work on the Pacific Coast is directed from research laboratories in Nanaimo, BC. The Board operates 16 research vessels for its biological studies varying from small inshore and lake craft to specially built seagoing ships. The Board acts as Canada's research agent for three international fisheries commissions and two international sea-mammal commissions to which Canada is party.

The aquatic environment program studies the marine and freshwater environment in which aquatic organisms live, in order to increase knowledge in primary and secondary productivity and the occurrence of ocean and freshwater life of importance to man. Considerable importance is placed on increased research efforts associated with pollution prediction, abatement and elimination, including the effects of freshwater and marine eutrophication. Investigations are also conducted into the distribution and physical and chemical characteristics of major ocean currents and the physical and biological structures of large ocean areas including the ocean bottom where concentrations of fish and other aquatic life occur. Ocean climate and ocean weather as they affect the distribution of fish and other living organisms, as well as the vertical and horizontal distribution of nutrient matter and the cycle of energy and life in the seas, are regularly observed and correlated. These studies, as well as special studies of interest to the Armed Forces, the Ministry of Transport and the international fishery commissions, are carried out by groups operating from Dartmouth, NS, Winnipeg, Man., Burlington, Ont., and Nanaimo, BC, with strong ship support from the Armed Forces and the Ministry of Transport, and with the co-operation of the Department of Energy, Mines and Resources.

Investigations aimed at improving methods of preserving, processing, storing and distributing fish products, as well as of utilizing all parts of the fish, are carried out. These include developments in refrigeration and the use of antibiotics as fish preservatives, improvements in canning, smoking and salting of fish, and the development of new products for the utilization of abundant species that are not now used for food. Fundamental research on the structure and composition of fish proteins, marine oils, hormones from aquatic organisms and other products from the sea is under way. These studies are carried out in research laboratories at Halifax, NS and St. John's, Nfld. on the Atlantic Coast; at Vancouver, BC, on the Pacific Coast; and, for inland products and processing, at Winnipeg, Man.

9.2.5 Department of Communications

The Communications Research Centre (CRC) of the Department of Communications, with a staff of about 500, carries out research and development in a number of communication-related areas. The main CRC site is at Shirley Bay, Ont., 15 miles west of

Ottawa; there are also a number of experimental sites, some at remote northern locations such as Resolute Bay.

The major activity of the Department is the Communications Technology Satellite (CTS) program. The satellite, to be launched in 1975, is being constructed at CRC and represents a major new undertaking for the Centre's staff. They draw on invaluable experience gained in the highly successful Alouette and ISIS satellite research programs conducted during the previous decade.

One major project involves a joint study by CRC and universities into the feasibility of a Canadian computer communications network (CANUNET). Other research areas include: computer graphics systems; effectiveness and impact of two-way video, audio and graphics communications services for institutional user groups; computer image processing; optical data storage and processing, and optical propagation in glass fibres. Studies of computer signal processing have been undertaken for the Department of National Defence.

Communications systems. Research in communications systems supports the Department's mission to develop and introduce new systems and facilities for Canada's domestic and international communications needs. One of the most important new developments in this field is the introduction of satellites for domestic communications, navigation and other applications.

Communications experiments are being developed to test and demonstrate the applications of the high-powered transponder to be carried in the Communications Technology Satellite. This transponder will enable it to beam back to earth a much more powerful signal than present satellites. Studies cover the problems of providing colour television, wide-band data transmission and audio broadcasts to low-cost terminals in remote regions. Provincial governments, industry, universities and other organizations are to propose experiments to be carried out in the satellite's expected two-year lifespan. Experiments are being carried out to study propagation in the super-high frequencies which will be used by future satellites. Studies continue to develop advanced satellite terminals for use by the Department of National Defence in land, sea and air environments. Research also continues in the area of proposed communications and navigation satellites for aeronautical communication at extreme latitudes. The latter is a joint program with the Ministry of Transport and supports Canada's participation in international studies of these proposed navigational aids.

The Communications Technology Satellite program began officially on April 20, 1971, when the Department of Communications and the US National Aeronautics and Space Administration (NASA) signed a Memorandum of Understanding. Under the agreement, Canada will design, build and operate the experimental satellite and NASA will provide some advanced components and launch the satellite into a geostationary orbit. The program will allow Canada to evaluate the technological, economic and social benefits which could be provided by such a powerful satellite broadcasting to small, low-cost ground terminals in remote areas. Another important objective is to test, under actual space conditions, various items of advanced design which might be suitable for telecommunications satellites. The ten-nation European Space Research Organization (ESRO) has asked to participate in the program by providing some components which it hopes to use on its communications satellites for the 1980s.

Under CRC direction, a team of experts from various industries established initial design concepts and a basic spacecraft configuration for the Project Definition Plan. Industrial proposals were then invited for spacecraft design, and design contracts were awarded to Spar Aerospace Ltd. of Toronto for the structure and RCA Ltd. of Montreal for the electronics.

Information sciences. Research in information sciences seeks ways of improving machine-to-machine communications, man-to-machine interactions and man-to-machine telecommunications services. This basically involves finding better ways to use new technology for storing, processing and retrieving information.

Communications systems engineering has increased, and the technique of systems modelling is being used as part of a study of data communications requirements. Research and development in the radar field includes assistance in communications and remote sensing programs for the Departments of National Defence and Energy, Mines and Resources.

Radio environment. Studies of the radio environment focus on problems peculiar to Canadian latitudes. Much of the work involves systems such as high-frequency radio which depend on the ionosphere, and studies of the limitations imposed by ionization variations resulting from natural and man-made conditions. A varied observational program is pursued using ground-based equipment at a number of locations, rocket-borne experiments and satellite observations from the Alouette and ISIS satellites. Related studies deal with: direct effects of ionospheric conditions on spacecraft antennas, noise and interference levels in various locations in Canada, and the use of different portions of the radio spectrum for practical purposes such as remote sensing. CRC continues to provide a radio prediction, casting and consulting service to Canadian communications users.

Spacecraft technology. Applied research in advanced electronics and space mechanics supports Canadian efforts in the field of communications satellites, particularly the Communications Technology Satellite program. The research concentrates on areas not yet adequately covered by Canadian industry. A new and difficult problem is the reliable stabilization in space of a satellite with large flexible appendages, such as the CTS with its extendable arrays of solar cells. This differs considerably from the present generation of communication satellites, including Anik, which are stabilized by spinning the satellite body. New electronic devices, materials and technologies are required, as well as a superior standard of component reliability.

Although the program is specifically intended to support communications, research results often can be applied elsewhere, in fields such as medical electronics and pollution control. For example, research in reliability analysis resulted in the design of a specialized scanning electron microscope at CRC. Through Canadian Patents and Development Limited, a new Canadian company was formed to manufacture this instrument and multi-million dollar sales were forecast.

Outside research. The Department's program of research contracts to universities has been set up in five major categories: northern communications technology, man-machine interaction, computer technology, machine intelligence, and socio-economic aspects of communications. Some 44 contracts, a commitment of about \$700,000, have been approved for universities across Canada. The object is to create a resource for contract research in Canadian universities to which the Department and other agencies may go in future to meet specific requirements. In the 1972-73 fiscal year about 30% of the contracts were aimed at research on the social, economic and legal-regulatory aspects of communications in modern society.

Liaison has also been strengthened with other research laboratories in government and industry. This is facilitated by the increasing number of electronics and communications industries which have located in the Shirley Bay area in recent years, although the site of CRC was originally chosen as an electronically "quiet" rural area. Many of the Department's research projects involve contracts with industry, with CRC providing design authority and project management. Research projects are also carried out at CRC for other government departments and agencies on a cost-recovery basis. About one fifth of CRC manpower is devoted to work on behalf of the Defence Research Board, providing research and development in the field of telecommunications for the Department of National Defence.

9.2.6 Department of Industry, Trade and Commerce

The results of research, development and advanced technology are regarded by the Department of Industry, Trade and Commerce as a major resource essential to the achievement of efficient and sustained growth in the production and trade of Canadian goods and services. As tariff barriers are lowered and as natural resources become more easily replaceable and transportable, technological innovations will be a key factor in the economic growth of industrially advanced countries. Emphasis is thus placed on the level, distribution and quality of the national effort directed to the advancement and application of science and technology. A major function of the Department is to promote and assist product and process development and to increase productivity in Canadian industry through the greater use of research and the application of advanced technology. The Department achieves these objectives mainly through the use of financial assistance programs.

The Industrial Research and Development Incentives Act (RSC 1970, c.I-10) provides a general incentive for scientific research and development. Its objective is to induce Canadian corporations to undertake additional research and development likely to result in economic

benefit to Canada through the eventual production of new and improved products and processes for sale in domestic and foreign markets. Any taxable Canadian corporation carrying on business in Canada may apply for a grant which is based on the corporation's expenditures for scientific research and development carried out in Canada. Since the inception of the program in 1967, some \$107 million has been authorized for payment to Canadian corporations for scientific research and development to be conducted in Canada. Of this amount, \$31.3 million was authorized for payment during the year ended March 31, 1972.

Financial assistance for selected projects to develop new or improved products and processes which incorporate new technology and which offer good prospects for commercial exploitation in domestic and international markets is provided under the Program for the Advancement of Industrial Technology (PAIT). The basic aim of this program, established in 1965, is to help Canadian secondary industry upgrade its technology and expand its innovative activity by underwriting the technical and market risks of specific product or process development projects involving a significant technological advance. In 1971 the program was expanded to include operations and market research, and systems and applications studies directly related to market potential or increased productivity. Applications for PAIT assistance are appraised as to the technical and commercial feasibility of the project, the capabilities of the company to carry it out, and the project's potential contribution to the economic growth of Canada. Projects supported include the development of a water bomber aircraft, satellite communications equipment, electromagnetic prospecting equipment, flight and safety devices, advanced machinery and machine tools, wood-harvesting equipment, and data display devices. From the inception of the program in 1965 to March 31, 1972, the Department made commitments to provide assistance to the extent of \$126.8 million for 515 projects having an estimated value of \$247.4 million.

In order to compete for and participate in the development and production programs of other NATO countries, Canada's defence industry must keep pace with product developments and advances in manufacturing technology dictated by the requirements of modern military equipment. The Defence Industry Productivity (DIP) Program is designed to enhance the technological competence of the Canadian defence industry in its export activities by providing financial assistance to industrial firms for selected projects. Emphasis is placed on those areas of defence technology having civil export sales potential. Assistance may cover the development of products for export purposes and the acquisition of modern machine tools or other advanced manufacturing equipment to meet exacting military standards as well as pre-production expenses to establish manufacturing sources in Canada for export markets.

Projects initiated under the DIP Program have been instrumental in helping industry to develop its skills on a specialized basis in fields of technology that have defence and civil applications and which Canada is favourably situated to exploit. Costs of these projects are shared by the Department and the Canadian firm concerned and, in some instances, by the governments of other NATO countries. Among the projects that have received assistance are communications and aircraft navigation systems, gas turbine engines for aircraft, flight safety and simulation equipment, and information display facilities. Exports of the products of these developments continue to increase, including significant orders for such diverse applications as commercial airlines, public communications networks and television distribution systems. Since the inception of the Program in 1959, more than 597 projects involving a contribution of some \$344 million have been supported.

The Department assists small firms in Canada to keep abreast of technological advances and to maintain a more competitive position in world markets through the establishment of three programs. As a result of the financial assistance provided by the Centres for Advanced Technology Program, instituted in 1968, universities and other organizations are able to establish centres of expertise in fields where industry is unable to conduct the research necessary to develop new areas of technology, or where many industries seem likely to benefit from research into a common technological area. Three centres have been established — the Canadian Institute of Metalworking at McMaster University, the Centre for Powder Metallurgy at the Ontario Research Foundation and the System Building Centre at the University of Toronto. Through the Industrial Research Institutes Program, scientific services are available to industrial firms unable to maintain research facilities and personnel of their own, thus helping to alleviate the shortage of scientific and technical resources that exists in Canadian industry, to foster a closer relationship between universities and improve their

understanding of the problems of industry, and to help industry become acquainted with the latest pertinent scientific and technical developments. Institutes have been formed at the University of Windsor, McMaster University, the University of Waterloo, Nova Scotia Technical College, McGill University, L'École Polytechnique, the University of Guelph and Ryerson Polytechnical Institute. Through membership in industrial research associations, in which member companies may undertake on a co-operative basis research and development and related scientific activities such as technical information, technical consulting, analysis and testing, etc., small- and medium-size companies acquire research and development and other scientific services which they are unable to afford on their own.

The Department is actively engaged in scientific and technological exchanges with foreign countries for the purpose of stimulating innovation in Canada, promoting industrial development through licensing arrangements, encouraging joint research and development projects in specific areas of technology, and developing existing and new markets for Canadian technological products. To facilitate such exchanges, bilateral science and technological agreements have been signed with Belgium, the Soviet Union, and the Federal Republic of Germany, which provide for annual consultations and review of activities. The Department also participates in the activities of international organizations which are concerned with the industrial application of science and technology.

Co-ordination of policies relating to the government's industrial assistance programs is achieved through the Interdepartmental Committee on Innovation. The Committee's terms of reference include a continuing review of program objectives and policies, studies of the environmental factors affecting the innovation process in Canada and comparison with other countries, studies concerning the relationship between investment in industrial research and development and economic growth, analysis and review of the government's policies and programs with respect to procurement and the relation of the level of R&D activities in government establishments to that of financial assistance to R&D in industry.

9.2.7 Ministry of Transport

The Ministry of Transport's Transportation Development Agency is one of the prime participants in scientific and industrial research in the field of transportation. The following sampling of projects now under way gives some indication of the range of studies supported. Mackenzie River Basin study: to identify and evaluate transport requirements and costs of moving people and goods to, from and within the Basin area over the next 15 years. Capsule pipeline experimental research: to develop capsule pipeline transport technology in Canada and evaluate its economic viability; this project is contracted to the Alberta Research Council. Regina Telebus demonstration: to test a demand-responsive transit system as an alternative to the automobile in low-density areas and the possible application of this technology to other Canadian cities; this project is undertaken in co-operation with local and provincial authorities. Northern resource transportation: to evaluate a number of multi-modal transportation systems within various circumstantial scenarios to move gas and oil from the Arctic Islands. Magnetic levitation: to conduct applied research into the use of superconducting magnets for the levitation and propulsion of guided ground vehicles; this work is being done by personnel from Queen's University and the University of Toronto in co-operation with the Canadian Institute of Guided Ground Transportation. Sonic boom research: to evaluate alternatives in co-operation with other federal departments and agencies and to formulate policy for the handling of supersonic aircraft movements in Canada. Bell "Voyageur" evaluation: to conduct operational trials in the Mackenzie River Basin and environs in order to establish the operational, technical and economic capabilities of this Canadian-built air-cushion vehicle. Commodity flows of Canadian exports: to show the transportation routes and modes of Canadian exports from each economic region to their destination abroad. Slurry pipeline experimental research: to obtain technical information on small-scale and full-scale solids pipelines for the materials most likely to be transported by this method in the future; this project is being conducted by the Saskatchewan Research Council in co-operation with the University of Saskatchewan.

9.3 Provincial scientific research organizations

Nova Scotia, New Brunswick, Quebec, Manitoba, Saskatchewan and Alberta have established research councils or foundations and Ontario and British Columbia have assisted financially in the setting up of such organizations. Most provincial governments have

university laboratories to consult about local industrial and agricultural problems and many individual departments have facilities for research or assist research through the provision of financial aid to students working in those and other scientific fields. Provincial research efforts in forestry, fisheries, agriculture and mining are covered in Chapters 10, 11 and 12.

9.3.1 Nova Scotia Research Foundation

This body was created by the government of Nova Scotia in 1946 to provide industry and government with scientific and technical assistance in finding new and better ways to utilize the natural resources of the province and to assist the processing industries. The Foundation's laboratories are located in Dartmouth and were built with funds granted by the Atlantic Development Board on a ten-acre site donated by the province. The building was first occupied in 1969 and now houses a staff of 68 which includes 54 scientists and technicians.

The Foundation is governed by a board made up of scientists and industrialists and its operations are carried out in seven divisions. The Geophysics Division carries out gravity, seismic, magnetic, well-logging and electromagnetic surveys on land, and seismic bottom profiling and magnetic surveys at sea for industry and for government. It sponsors a program of research on the surficial geology of Nova Scotia. The Chemistry Division, through research and development, utilizes the minerals and other natural resources of the province to develop new processes and products. Contract services are available to industry and government in areas of inorganic and food chemistry, pollution control and chemical engineering.

The Operational Research Division provides a service for industry and government by utilizing the mathematical techniques of systems analysis and undertakes projects in the area of optimal resource allocation, production scheduling and distribution. The Engineering Physics Division makes available developments in applied physics to Nova Scotia industry. Emphasis is at present placed on research and development in electronic and mechanical engineering and in measurement techniques. The Technical Services Division provides technical information on materials, equipment and processes and gives industrial engineering assistance to manufacturing industries. The various sections include technical inquiries, industrial engineering and a related information centre. The Applied Biology Division carries out research on the distribution, growth, conservation and utilization of commercial seaweeds. The Division is also involved in microbiological research related to water pollution and the treatment of industrial waste waters. The Library is well stocked with scientific and technical information to aid the Research Foundation staff, industry and government.

A *Research foundation bulletin*, issued occasionally, keeps industry advised of Foundation activities and of important discoveries in science and technology. The *Research record* gives a descriptive account of past research projects. Annual reports are published on a regular basis.

9.3.2 New Brunswick Research and Productivity Council

The Council is a body corporate set up in 1962 by an Act of the government of New Brunswick. It is governed by an independent group of prominent citizens from management, labour and the professions, which meets four times a year. Members are appointed for three-year terms by the Lieutenant-Governor in Council, one as chairman who reports to the Premier annually. The greater part of the capital investment was provided by the Government of Canada but the province makes an annual operating grant from its Consolidated Revenue Fund. Additional funds are derived from cost-recovery fees, services under contract, sponsorship, etc. The Executive Director has charge of all matters relating to the administration of Council affairs and has supervision over and direction of the work of the staff.

The Council maintains a well-equipped centre for engineering and problem-solving, industrial research and development and, in addition to its provincially oriented projects, conducts research on a cost-recovery basis for clients in other areas of Canada and in other countries.

9.3.3 Quebec Industrial Research Institute

The Quebec Industrial Research Institute, established by a National Assembly Act on December 12, 1969, is a corporation as defined in the Civil Code. The Institute is composed of a Director General and 14 members from industry, university and government, appointed by the Lieutenant-Governor in Council. Its main objectives are: research in applied sciences carried out either in its own laboratories or in those of other research institutes; development

of products, processes and equipment of an industrial or scientific nature; and collection and distribution of technological and industrial information. Headquarters are located in the vicinity of Quebec City.

9.3.4 Ontario Research Foundation

The Ontario Research Foundation (ORF), established in 1928, is an independent corporation. It derives its powers from a special Act of the Ontario Legislature and is responsible to a board of governors consisting of leading members of the industrial, commercial and scientific communities who are appointed by the Lieutenant-Governor in Council. The organization was financed initially by an endowment fund, provided by industrial and commercial corporations through the Canadian Manufacturers' Association, and an equal block grant from the provincial government. Most of its current income is derived from contract research undertaken mainly for industry. In recent years the Ontario government has provided a direct annual grant to ORF, the amount of which is directly proportional to ORF's income from industry.

The Foundation is concerned primarily with the development of Canadian industry through the application of science and technology. Also, at the request of the various departments of the Ontario government, it undertakes work relative to the natural resources of the province. Foundation activities are not restricted to the province; work is undertaken for any organization in Canada on the same basis.

The Foundation undertakes industrial research and development for companies and governmental agencies as requested, particularly with respect to natural resources and to defence; provides and maintains an effective and efficient applied research and development facility for the use of industry and government agencies, using funds provided by the Ontario government to support the back-up research necessary for this purpose; and brings to the attention of industry and governmental agencies research opportunities that promise economic or social benefits. Situated in the Sheridan Park Research Community, 17 miles west of Toronto, and serving as the nucleus of that scientific centre, ORF has a staff of approximately 285 scientists, engineers, technicians and service personnel.

Since its establishment, ORF has provided both large and small companies with research and development services. These have ranged from short-term investigations and feasibility studies, through product and process development to long-range fundamental scientific investigations. All research and development projects are conducted on a confidential basis, including all business, technical or proprietary information revealed to ORF by clients or prospective clients. Patents resulting from research and development studies are assigned to the client.

9.3.5 Manitoba Research Council

The Manitoba Research Council consists of seven members and 16 advisory members representing natural-resource-based industry, manufacturing, labour, the universities and government. Permanent staff members are provided by the provincial government. Its work is financed by provincial government appropriations, although fees and service charges may be levied for its services. The objectives of the Council are to promote or carry out, or cause to be promoted or carried out, research and development investigations related to the natural resources and industrial operations of the province. At present, research sponsored by the Council is performed in the existing research laboratories of the province. Much of the research is aimed at establishing Manitoba as a centre of excellence in food products, electronics, materials research and building systems. In addition, through a technical information service, industries are encouraged to incorporate in their operations new technological developments. The main reason for the establishment of the Council is to assist Manitoba industry to improve its market position by developing a more scientifically based production capability. The Council maintains an office in the Provincial Government Administration Building (Norquay Building) in Winnipeg.

9.3.6 Saskatchewan Research Council

This Council was set up in 1947 under an Act of the government of Saskatchewan. The Council carries out research in the physical sciences with the aim of improving the provincial economy with particular emphasis on the commercial exploitation of provincial resources and the scientific aspects of business. At first the Council had no scientific personnel and

laboratory facilities of its own, its research programs being carried on at the University of Saskatchewan by means of grants to members of the staff and scholarships to graduate students. The 1947 Act was amended in 1954 to empower the Council to acquire property, employ staff and conduct its own financial affairs. Laboratory buildings were erected on the university campus in 1958 and were extended in 1963. The present program places emphasis on technical assistance to industry and provincial government departments, research in the areas of metallic and industrial minerals, water, the environment, slurry pipeline transportation and selected aspects of agriculture. A large part of the program is carried out by the permanent staff numbering about 70 but some of the Council's research is still promoted by grants to university staff. The members of the controlling body, the Council proper, are appointed by the Lieutenant-Governor in Council and consist of representatives of the Saskatchewan government, the university and industry.

9.3.7 Research Council of Alberta

The government of Alberta set up a scientific and industrial Research Council in co-operation with the University of Alberta in 1921 to promote mineral development within the province. Considerable effort is still directed toward the development of natural resources, but increasing emphasis is being given to research related to the establishment of new industries within the province, to transportation and to environmental problems. The principal areas of activity are fossil fuels development and utilization, geological surveys and research, groundwater, soils, industrial minerals, chemical product and process development, microbiology, technical assistance to industry, gasoline and oil testing, pipeline transportation, highway research, river engineering, environmental studies and hail research.

The operations of the organization are controlled by a Council of 15 individuals representative of the Alberta government, the universities and industry. The various research fields are reviewed by advisory committees of specialists drawn from industry, the universities and provincial government. The activities of the Research Council of Alberta are financed by provincial government appropriations and by contract research for private industry and federal agencies.

The main Council laboratories and offices are located on the University of Alberta campus in Edmonton. A pilot plant and laboratory facility is located in the Clover Bar area east of the city. The full-time staff comprises approximately 230 scientists, engineers, technologists and supporting personnel.

9.3.8 B C Research

B C Research performs a technical function for the British Columbia Research Council, a non-profit, industrial research society with offices and laboratories at Vancouver, BC. This function is to enable even the smallest firms to improve their competitive position in Canadian and world markets by the use of the most up-to-date scientific knowledge. B C Research carries out contract research for clients on a confidential basis, initiates "in-house" research programs designed to promote and utilize the resources of the province, and provides a free technical information service in collaboration with the National Research Council. B C Research is active in the areas of applied biology, chemistry, engineering, physics, operations research, industrial engineering, industrial market studies and economic feasibility studies.

9.4 University research

University research in Canada is funded from many sources. A large part of the total cost is covered by funds not specifically assigned to research activities. The proportion that should be attributed to research is often a matter of opinion as it concerns the apportioning of academic salaries between teaching and research, maintenance, etc. A special study conducted for the Science Council of Canada and the Canada Council indicated that in 1966-67 the total cost of research in Canadian universities was about one half of the total university expenditure. This analysis has not been repeated but no major change in the proportion is expected. Most of this cost is borne by the provincial jurisdiction over education and the federal responsibility for research.

The main components of research costs are: assisted research funds — grants and contracts to institutions or members of the staff; awards, such as research fellowships and scholarships; pro-rated value of faculty time devoted to research; and other indirect costs including pro-rated costs of libraries, administration, maintenance and publications. The appropriate

part of the capital cost of buildings and facilities is often included in operating expenditures, e.g., when financed from grants for assisted research. Most research equipment is provided through such grants. Indirect costs are not normally broken out in university accounts and are covered primarily from general funding of university education by the provincial governments. However, in accordance with the Federal-Provincial Fiscal Arrangements Act, 1967, the federal government reimburses the provinces for at least 50% of the operating costs of all post-secondary education. It follows that one half of the above indirect cost of research is, in the end, covered by federal funding.

Assisted research funds represent part of the direct costs of research and include all funds channelled through universities, even though most of them are assigned to individual researchers. These funds are intended to pay for equipment, materials, travel and research assistance, including student assistance, and cannot be used to provide or supplement the salaries of the staff. Scholarships and fellowships provide personal incomes for some staff members and for graduate students or postdoctorate fellows; some are tenable abroad and some are reserved for foreign students in Canada as a part of foreign aid.

Most of the assisted research funding is granted for specific purposes, mainly in response to proposals made by the universities. These grants have the most direct influence on both the magnitude and the nature of university research. Because of this direct link their total monetary allotment can be used as a gauge of research activities in Canadian universities. During the past decade, assisted research funds rose gradually from \$26.5 million in 1961-62 to \$152 million in 1970-71, representing about 12.5% of total operating expenses throughout this period.

Assisted research funds are derived from several sources. The major source in 1970-71 was the federal government, contributing \$105 million, or 69.1% of the total; \$23 million (15.1%) came from provincial sources and \$24 million (15.8%) from foundations, business enterprises and other sources. This distribution has varied only slightly over the past few years and indicates the predominant influence of federal financing on university research in Canada. This would still be true if direct awards to individuals (research scholarships and fellowships) were included in the above figures. Assisted research funds include the support of the social sciences and the humanities but that part represents only a small percentage of the total shown here, particularly since most of such support is in the form of direct awards, by-passing university accounts.

Federal support for research in universities can be divided into three main components coming from two types of sources. The main elements are the grants and contracts program, the awards (scholarship and fellowship) program and the support of related scientific activities including research publications, acquisition of research collections and symposia. The major sources of support in 1972-73 were the National Research Council (NRC) and the Medical Research Council (MRC), contributing \$58.4 and \$33.6 million, respectively. Other significant sources included the Department of National Health and Welfare (\$19.1 million), the Atomic Energy Control Board (\$7.5 million), Environment Canada (\$3.4 million), and the Defence Research Board (\$3.4 million). All other departments and agencies combined contributed \$6.4 million for an over-all total of \$131.8 million. The above data include the allocation of funds to non-profit organizations and cover development as well as research. The development component is small and the line between research and development is difficult to draw in many fields, such as health sciences. The non-profit institutions for the most part consist of hospitals and research institutes where research is carried out mainly by academics. On the other hand, scholarships supporting primarily education rather than research, fellowships tenable abroad, and support of some related activities are excluded.

An extremely important role is played by the NRC and the MRC in support of university research, since about 70% of the federal funding comes from these two Councils. The National Research Council has the responsibility for supporting research in the natural sciences and in engineering; it is the largest sponsor of research in Canada. The Medical Research Council, under a new Act adopted in 1969, assumes responsibility for research support in all the disciplines in the health sciences exclusive of the public health field. This represents an extension of its former terms of reference which encompassed only medical research.

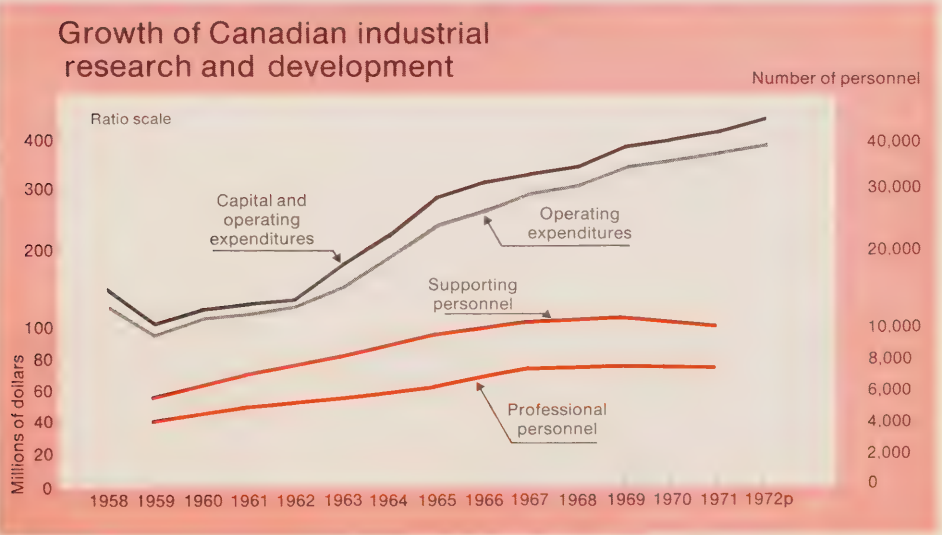
The purpose of support for research by both Councils is to achieve a healthy and balanced development of knowledge in Canadian universities rather than to support any particular mission of their own. They award grants largely in response to initiatives from the universities

and their criteria for support are based mainly on the merits of the individual researcher and the excellence of the project. The direct application or usefulness of the knowledge sought is generally not given high priority in assessing a project. These funding policies have favoured the development of basic research of a high calibre in Canadian universities. The MRC assigns approximately 50% of its funding for research in certain areas which their studies indicate need more effort. The NRC exerts similar influence through “negotiated development grants” which amount to about 10% of the total funding and by indicating to prospective grantees the areas in which more proposals would be desirable.

The almost explosive growth that occurred in university research during most of the 1960s appears to be moderating. Some trends in Canadian university research have become evident and these may be accentuated in the immediate future. Foremost among these is the breaking down of the barriers between disciplines on campuses. With increasing frequency, projects are being undertaken and research institutes established that depend on the co-operation of two or more departments, faculties or even universities. Noteworthy also is the recent trend toward a greater degree of specialization on the part of universities. Special grants (Negotiated Development Grants), made available by the NRC and the MRC, encourage universities to follow this policy of specialization. Recent recommendations of the Science Council advocated more support for university research from the mission-oriented departments with the NRC and the MRC (together with the Canada Council) assuming more of a balancing role to ensure that no legitimate discipline is neglected. These Councils have established a co-ordinating committee to make certain that no gaps exist in their joint coverage. The problems of rationalization of university research, establishment of criteria for selection of projects and for distribution of support among disciplines or problem-oriented work are under active public discussion and are the subject of a number of special studies. This analysis may lead to a considerable redirection in the field of university research in Canada during the 1970s.

9.5 Industrial research

After a period of growth, expenditures on industrial research and development by Canadian firms, particularly those associated with fabrication and end-product manufacture, have now levelled off around \$400 million annually. The creation and expansion of industrial research and development units is designed to meet competition from other Canadian as well as foreign firms and to exploit efficiently the country’s natural resources. During the early 1960s, capital and operating expenditures for industrial research and development (R&D) increased rapidly, encouraged by the growth in markets, government incentives, improved production facilities, financial resources and supplies of technically skilled manpower.



Toward the end of the decade, however, total expenditures remained almost constant, accompanied by a lack of growth in the professional and supporting personnel.

The federal government is well aware of the need for a strong research and development effort in Canada and has inaugurated several programs of direct financial assistance. The Department of Industry, Trade and Commerce administers the Defence Industry Productivity Program and the Program for the Advancement of Industrial Technology (see Section 9.2.6). The Industrial Research and Development Incentives Act authorizes the Department to make substantial grants to firms expanding their research and development effort. The National Research Council has its Industrial Research Assistance Program (see Section 9.2.1) and the Defence Research Board makes grants in support of Defence Industrial Research.

The newly established Industrial Science and Technology Division of the Policy Branch at the Ministry of State for Science and Technology has the purpose of ensuring comprehensive, well-planned and integrated policies in this area. Its objective is to assure that Canada develops and maintains a strong scientific and technological capability within the industrial sector and a favourable environment for the optimum application of this capability.

In recent years the total direct federal support for industrial research and development has increased from \$75.5 million in 1965-66 to \$149.7 million in 1971-72 and is expected to reach \$160.3 million in 1972-73.

The level of employment of scientists and engineers in the various areas of industrial research and development gives a measure of the corresponding activity. The ranking of the ten leading industries in 1971 is shown in Table 9.1.

The ten industries listed absorb some 78% of the scientists and engineers employed in research and development. The first four industries alone (electrical products, other chemical products, aircraft and parts, and non-ferrous metals) employ about 53% of R&D personnel in Canada, and account for over 53% of all current intramural expenditures on R&D.

One possible method of identifying research-intensive industries is to compare the number of scientists and engineers involved in R&D with the total number of persons employed by the industry. The ranking of the ten leading industries for 1971 based on this criterion is given in Table 9.2.

9.5.1 The Pulp and Paper Research Institute

The Pulp and Paper Research Institute of Canada is a centre of research concerned with virtually every aspect of the production and use of pulp and paper products. It was established in 1913 as a branch of the Dominion Forest Products Laboratories and in 1927 was reorganized under the joint sponsorship of the Canadian Pulp and Paper Association, the federal government and McGill University. The Institute staff carries out fundamental research and some applied research in the fields of logging operations and pulp and paper mill operations. In addition, in co-operation with McGill University, it trains postgraduate students who are working toward master's and doctorate degrees in physical chemistry, wood chemistry, or chemical and mechanical engineering, and whose theses subjects lie in fields of interest to the pulp and paper industry.

The Institute's head office and main laboratories are located in Pointe Claire on the western outskirts of Montreal in a building constructed by the Government of Canada. Space provided by the University is also occupied on the campus of McGill University by Institute staff and students involved in the graduate education program. The Institute's facilities include: organic and physical chemistry, physics and engineering laboratories; pilot plants for chemical pulping, pulp and chip refining and waste liquor pyrolysis; facilities for logging research; an extensive library; shops and special facilities for pulp and paper testing and for photographic and microscopic (both light and electron) studies of wood, pulp and paper. It has a staff of about 200.

The Institute's research activities comprise a basic program in pulp and paper research and in logging research, contract research and technical services. The basic pulp and paper research program is supported by assessments from the maintaining membership (48 companies, representing more than 100 mills and about 95% of the total production of the Canadian industry). The logging research program is currently supported by a financial contribution from the Canadian Forestry Service of the federal government. Both programs comprise research of interest to the industry as a whole as distinct from that which is the concern of only a single company.

The projects in the research program range from studies of logging machine prototypes to the converted end-products of the pulp and paper industry, and are directed at eight broad research goals: reduction of wood cost, reduction of fibre cost, reduction in capital and operating costs, testing and process control, products research, reduction of environmental pollution, basic knowledge, and the transfer of technology. The Institute is regarded as a centre for broad, long-range and uninterrupted studies of basic principles and for major engineering research and development projects which individual pulp and paper companies would find difficult to justify if the costs were not shared. Moreover, the Institute is a centre of highly specialized equipment and manpower which individual companies would not normally have.

In addition to its permanent staff, the Institute, in co-operation with McGill University, has some 45 graduate students working on fundamental projects in the background of pulp and paper technology, which also serve as their theses topics. The E.B. Eddy Professor of Industrial and Cellulose Chemistry at McGill, who is also a staff member of the Institute, directs graduate student work on such subjects as the behaviour of the materials of which wood is made — cellulose, lignin and hemicelluloses. The Director of the Institute's Applied Chemistry Division, also a Professor in the McGill Chemistry Department, supervises graduate student work in polymer, surface and colloid chemistry with particular reference to those aspects that pertain to the physics and chemistry of pulp and paper. An Associate Professor of Chemical Engineering at McGill, who is a consultant to the Institute, directs graduate students in a variety of chemical studies. In addition, the Director of the Institute's Applied Physics Division, who holds a teaching appointment in McGill's Department of Mechanical Engineering, supervises graduate student investigations on such subjects as supercalendering of paper and frictional processes in polymeric systems. Other staff members who hold concurrent honorary positions at McGill as Research Associates assist in this student program.

The Institute undertakes contract research projects on a cost-reimbursement basis for individual companies or groups of companies in the pulp and paper or allied fields. The larger of these co-operative contracts have been concerned with problems of particular segments of the Canadian pulp and paper industry. The Institute also provides technical information to the industry and, to some extent, to other industries and the public. It maintains a specialized library for this purpose which stocks bibliographies, abstracts, translations and critical reviews for the use of the scientific staff and the industry.

9.5.2 Electrical industry research

Meeting the needs of society for energy resources at reasonable cost, in adequate quantity and with minimum environmental impact requires the solution of a wide range of problems related to the development of raw energy sources as well as the improvement of existing techniques. Extensive research is under way on a world-wide basis and the electrical energy field is particularly well suited to meeting energy needs within acceptable constraints set by economic, technical and social factors.

The Ontario Hydro research program dates back to the establishment of the Research and Testing Laboratory in 1912. Since then research facilities have grown appreciably and today the Research and Development Division employs over 300 people. The Division's high-voltage laboratory is capable of impulse testing at 1,250 kv and power frequency testing at up to 720 kv; this equipment can also be adapted for use as a 50,000-ampere current surge generator. A high-current-testing laboratory is presently under construction and upon completion will boast a capability of 100,000-ampere testing at up to 600 volts (single or three phase) for 0.5 second or continuous testing at up to 24,000 amperes and 300 volts (single phase).

The Research and Development Division is undertaking an extensive program to develop high-voltage transmission lines which are more compact and more aesthetically appealing. This study has yielded significant results not only in the design of new tower configurations but in many related areas as well. It was found, for example, that insulators treated with a semi-conductive glaze have greatly increased flashover strength, even in the presence of moisture and contamination. Significant achievements in the prevention of galloping in ice-laden conductors have also been made. Other studies are producing encouraging results in providing synchronized high-speed fault interruption, improved power system reliability and more efficient thermostats for the control of room temperature. The recent purchase of a scanning-type electron microscope has facilitated studies of the surface features of new alloys,

corrosion products, semi-conductive glazes on porcelain insulators and particulate pollutants.

Hydro-Quebec established the Hydro-Quebec Institute of Research (IREQ) in 1969 to provide a sound technological basis for Quebec's electric utility expansion and to provide research and testing facilities for other utilities and electrical manufacturers in Canada and throughout the world. In recognition of this national and international role, the Government of Canada provided substantial financial support to the Institute.

IREQ is located on a 600-acre site in Varennes near the Boucherville substation on the south shore of the St. Lawrence River about 18 miles from Montreal. This location was chosen to enable the Institute to be connected with Hydro-Quebec's 735-kv transmission system so that it could be used for testing and development purposes.

By the end of 1971 work on the complex had entered its third phase – construction of the high-power laboratory. Phase I, the administration building containing general laboratories, all staff offices, computers, workshops, a library and an auditorium, was completed in 1969 and became operational in 1970. The 60,000-sq-ft, 168-ft-high high-voltage laboratory (Phase II) became operational in October 1971. Utilizing impulse generators with outputs up to 6,400 kv and an energy content of 380 kilojoules, the high-voltage laboratory is capable of very sophisticated testing. The high-power laboratory, to commence operation in two stages in 1972 and 1973, will take its power source from the 735-kv transmission system but through the use of synthetic test circuits the effective short circuit power capability will greatly exceed that of the power system.

Projects under study involve: generation, transmission, distribution, system operation and power utilization. Many of the projects are under contract from interests in Canada, the United States and Europe while others are of particular interest to Hydro-Quebec. These include: studies to enable reduction in equipment costs; research into problems associated with high voltages, especially high-voltage direct current (HVDC) transmission technology; simplification of test standards; evaluation of existing and new insulation materials for cables; investigations into unconventional sources of generation, including fuel cells and thermo-nuclear fusion; studies of corrosion problems on lines and equipment; and research on the application of electrical energy to chemical synthesis.

9.6 Research and development expenditures

In 1970 Canada's current expenditures on research and experimental development in the natural sciences were estimated to be \$865 million, divided as shown in Table 9.3. The federal government is the major source of funds for research and experimental development providing 52% of the total current funds.

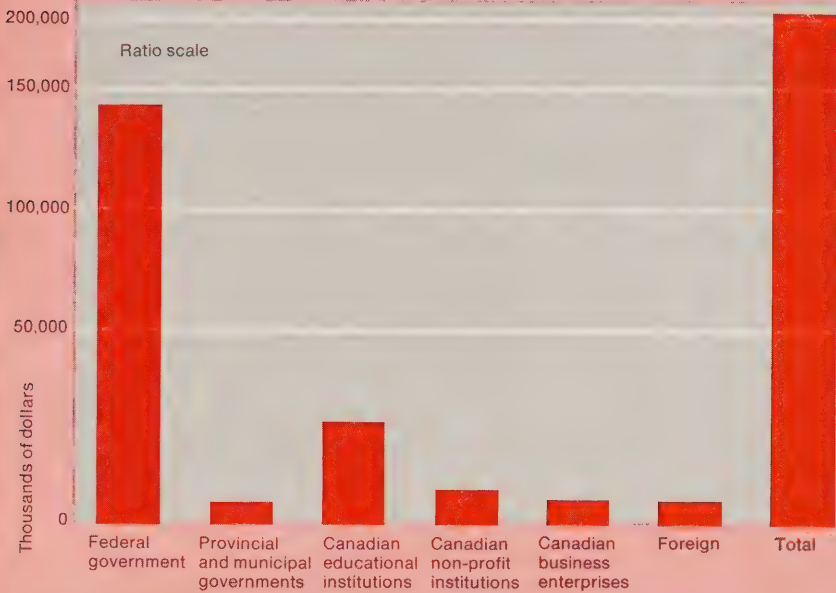
9.6.1 Federal expenditures

Information on the expenditures of the federal government on scientific activities is secured by two annual surveys carried out by Statistics Canada, one for the natural sciences and the other covering the human sciences. Each survey covers the actual costs of scientific programs for the preceding fiscal year and estimated expenditures for the following two years.

Natural sciences. In addition to research and experimental development, data are collected on five other classes of scientific activities in the natural sciences. These activities, often grouped as "related" scientific activities, include: scientific data collection, scientific information, testing and standardization, feasibility studies and scholarship programs. Data are also collected on personnel, sector of performance, object of expenditure, category of R&D, field of science and regional distribution of expenditures and personnel. Complete results are presented in the annual publication *Federal government activities in the natural sciences*, Catalogue No. 13-202.

Total federal government expenditures on activities in the natural sciences for 1972-73 were estimated at \$881 million, representing almost 6% of the total federal budgetary estimates. Scientific expenditures were reported by 29 departments and agencies; 11 of them spent more than \$10 million on scientific activities in 1972-73. R&D accounts for almost 72% of the total 1972-73 current expenditures; with slight variations this proportion has held constant for the past ten years. Scientific data collection – the gathering, processing, collating and analyzing of data on natural phenomena – is the principal related activity accounting for almost one half of the 1972-73 estimated expenditures for such activities. Table 9.4 shows federal scientific expenditures by type of activity and by major department or agency for the years ended March 31, 1972 and 1973.

Total expenditure by activity and by sector of performance, 1972-73



In 1972-73 approximately 59%, or \$412 million, of federal government current expenditures was for work done within its own establishments. An estimated full-time equivalent of 26,393 persons employed by the federal government were engaged in scientific activities in 1972, 16,749 in R&D work. Employees in the scientific and professional category accounted for 6,534 man-years.

Almost all payments to extramural performers of scientific activities go either to Canadian industry (51% of 1972-73 current extramural expenditures) or to educational and non-profit institutions (43%). Support of industrial R&D is provided principally through a group of special programs designed to develop a research capacity in Canadian industry by assisting current R&D work. Expenditures under such programs reached \$111 million in 1972-73. Support of research in Canadian universities and related institutions is also provided primarily through grants programs, with expenditures totalling \$124 million in 1972-73.

Human sciences. In 1971 Statistics Canada conducted an experimental survey of the human and financial resources of the federal government devoted to the human sciences. Such information had become necessary not only to complement data on the natural sciences but also because of the growing importance of these disciplines in policy decisions. The results of this experimental survey were published in *Federal government expenditures on the human sciences*, Catalogue No. 13-545.

The first annual survey of federal government activities in the human sciences was conducted in 1972 and covered most of the federal departments and agencies that have expenditures in these disciplines. As in the natural science survey the resources are measured in terms of two inputs: expenditures and manpower. Data were collected for the following activities: research, general data collection, scientific information, education support and operations studies. Complete results of this survey were published in *Federal government activities in the human sciences 1971-73*, Catalogue No. 13-205.

The survey indicated that federal departments and agencies expected to spend about \$202 million for activities in the human sciences during the fiscal year 1972-73. This amount represents the total federal financial support of human science activities, whether carried out

within government establishments or supported in other sectors under the form of grants, contracts, scholarships or other agreements. Most of the resources, however, some 70%, are spent intramurally for activities performed by government employees. "General data collection" represents the largest activity in the human sciences supported by the federal government. Table 9.5 gives the breakdown of federal expenditures on the human sciences by category of activity and sector of performance.

Research constitutes the second most heavily supported activity with almost one third of the federal resources devoted to the human sciences in 1972-73. Research expenditures are about equally divided between intramural research and the support of research carried out in other sectors. Thirty-five different departments and agencies devote resources to research in the human sciences, 12 of them having research expenditures of over \$2 million (Table 9.6).

9.6.2 Provincial expenditures

Eight provinces have established research councils or foundations, each having the primary role of assisting firms with technical problems and of aiding the development of provincial natural resources. In 1971 these organizations spent \$15.6 million on scientific activities distributed as follows: scientific research 31%; experimental development 19%; resource surveys 12%; industrial engineering 10%; analysis and testing 8%; capital (buildings and equipment) 7%; library and technical information 6%; feasibility studies 4%; and other activities 3%.

These activities are financed largely by provincial governments (60%) but Canadian industry and the federal government are also important sources of funds (20% and 15%, respectively). The councils and foundations reported almost 800 employees at the end of 1971. There were 300 scientists and engineers and almost 270 technicians and technologists. The remaining personnel consisted of management, administrative and other support staff.

9.6.3 Industrial expenditures

In recent years industrial research and development has shown no real growth in Canada. Expenditures shown in Table 9.7 are in current dollars (a constant dollar series might show an actual decrease). In 1970, approximately 73% was company-financed, 13% federal government-financed, with the remaining funds supplied by other Canadian companies, foreign governments and firms. The funding distribution varied between industry groups: companies in the chemical-based group funded 81% of their own R&D whereas the contributions of companies in the machinery and transportation equipment group and the electrical group amounted to 61% and 65% of the respective totals. These last two groups received greater financial assistance from the federal government than did firms in other groups.

Sources

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- 9.2.1 Information Services and National Science Library, National Research Council of Canada.
- 9.2.2 Technical Information Branch, Atomic Energy of Canada Limited.
- 9.2.3 Public Relations and Information Services, Department of Energy, Mines and Resources.
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- 9.5.1 Pulp and Paper Research Institute of Canada.
- 9.5.2 Public Relations and Information Services, Department of Energy, Mines and Resources.
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Tables

.. not available
 ... not appropriate or not applicable
 — nil or zero
 — too small to be expressed

e estimate
 p preliminary
 r revised
 certain tables may not add due to rounding

9.1 Employment of scientists and engineers in R&D, ranked by industry, 1971

Rank	Industry	No.	%
1	Electrical products	2,037	26
2	Other chemical products	853	11
3	Aircraft and parts	620	8
4	Primary metals (non-ferrous)	568	7
5	Drugs and medicines	411	5
6	Paper	389	5
7	Machinery	346	5
8	Transportation and other utilities	297	4
9	Food and beverages	272	4
10	Petroleum products	255	3
	Other industries	1,663	22
	All industries	7,711	100

9.2 R&D scientists and engineers per 1,000 employees, ranked by industry, 1971

Rank	Industry	Rate
1	Aircraft and parts	42
2	Scientific and professional instruments	39
3	Drugs and medicines	38
4	Other non-manufacturing	35
5	Electrical products	21
6	Other chemical products	15
7	Machinery	9
8	Rubber	8
9	Mines	7
10	Gas and oil wells	7
	All industries	7

9.3 Current expenditure on R&D in Canada, by sector of performance and source of funds, 1970 (million dollars)

Source of funds	Business enterprise	General government	Higher education and private non-profit	Total
Business enterprise	270	3	—	273
General government	54	327	90	471
Private non-profit	—	—	9	9
Higher education	—	—	85	85
Foreign	24	1	2	27
Total	348	331	186	865

9.4 Federal government expenditure on the natural sciences, years ended Mar. 31, 1972 and 1973 (million dollars)

Activity and department or agency	1971-72 ^r	1972-73 ^p
SCIENTIFIC ACTIVITY		
Research and development	508.9	563.8
Scientific data collection	96.1	116.0
Scientific information	37.1	42.3
Testing and standardization	37.8	40.5
Feasibility studies	7.8	9.2
Scholarship programs	14.1	14.1
Capital expenditure	98.5	94.7
Total	800.2	880.5
DEPARTMENT OR AGENCY		
Agriculture	59.6	69.9
Atomic Energy of Canada Limited	66.4	68.1
Energy, Mines and Resources	57.9	59.8
Environment	175.7	204.6
Industry, Trade and Commerce	89.3	100.4
National Defence	85.2	87.4
National Research Council	134.0	143.3
Other departments and agencies	132.1	147.0

9.5 Total expenditure on the human sciences, by activity and by sector of performance, 1972-73 (thousand dollars)

Scientific activity	Federal government	Provincial and municipal governments	Canadian educational institutions	Canadian non-profit institutions	Canadian business enterprises	Foreign	Total
Current expenditure	129,183	5,960	27,636	9,047	6,594	6,893	185,313
Research	29,435	1,409	14,492	8,277	4,665	1,022	59,300
Data collection	67,085	680	442	1	1,741	—	69,949
Information	11,302	171	1,560	335	35	715	14,118
Education	1,507	1,000	10,535	—	—	5,153	18,195
Operations studies	19,854	2,700	607	434	153	3	23,751
Capital expenditure	15,997	—	10	—	420	—	16,427
Total	145,180	5,960	27,646	9,047	7,014	6,893	201,740

9.6 Research expenditure on the human sciences, by agency, 1972-73^P (million dollars)

Department or agency	Intramural	Extramural	Total
Canada Council	—	7.4	7.4
Regional Economic Expansion	1.6	3.9	5.5
Urban Affairs	3.6	1.7	5.3
National Health and Welfare	0.2	4.5	4.7
Privy Council Office	0.4 ¹	2.9	3.3
Indian Affairs and Northern Development	2.5	0.7	3.2
Environment	1.2	1.9	3.1
Economic Council	2.2	0.5	2.7
Others	17.7	6.4	24.1
Total	29.4	29.9	59.3

¹ Commissions of inquiry and task forces.

9.7 Industrial R&D expenditure, 1967-72 (million dollars)

Industry group	1967	1968	1969	1970	1971	1972 ^P
Mines and wells	12.1	12.6	12.4	13.9	14.0	12.0
Chemical-based	71.5	76.9	84.7	83.5	73.0	77.0
Wood-based	19.8	20.1	19.6	20.8	18.0	18.0
Metals	23.1	22.9	29.5	36.6	38.0	46.0
Machinery and transportation equipment	57.3	60.1	72.4	61.6	52.0	56.0
Electrical	92.7	93.7	103.6	107.9	113.0	106.0
Other industries	14.1	18.8	20.7	23.6	29.0	34.0
Total current intramural	290.6	305.1	342.9	347.9	337.0	349.0
Total capital	43.7	35.8	49.3	53.2	54.0	62.0
Total intramural	334.3	340.9	392.2	401.1	391.0	411.0

Sources

9.1 - 9.2 Office of Science and Technology, Department of Industry, Trade and Commerce.
 9.3 - 9.7 Education Division, Institutional and Public Finance Statistics Branch, Statistics Canada.

Chapter 10

Renewable resources

10.1 Forestry

The forests of Canada are largely coniferous and comprise 35% of the total land area; of this forest, 74% is suitable for regular harvest. In 1970, 4,288 million cu ft of roundwood were cut. The harvesting and processing of this timber generated work for 261,000 persons with a payment of \$1,900 million in salaries and wages. The “value added” by processing beyond the raw materials stage amounted to \$3,300 million which is 9.3% of the value added of all goods-producing industries. A detailed explanation of the value-added concept will be found in the explanatory notes of Statistics Canada’s annual Census of Manufactures.

Canada is a major exporter of forest products. Exports of wood, wood products and paper in 1970 amounted to \$2,986 million, which is 18% of the value of all commodity exports. Paper and paperboard constituted 43% of all forest products exports and newsprint alone accounted for 37%.

British Columbia, followed by Ontario and Quebec, are the most important timber-producing provinces. In 1970 British Columbia sawmills produced 68% of all lumber in Canada and most of the sulphate pulp and softwood plywood while Ontario and Quebec produced most of the groundwood pulp and hardwood plywood.

There is a growing awareness of the importance of the forest in such areas as recreation, wildlife habitat and streamflow regulation. The recognition of these values is fostering a broader and more realistic concept of forestry.

10.1.1 Forest resources

10.1.1.1 Forest regions

The forests of Canada cover a vast area in the north temperate climatic zone but wide variations in physiographic, soil and climatic conditions cause marked differences in their character; hence, eight fairly well-defined forest regions may be recognized. By far the largest of these is the Boreal Region which represents 82% of the total forested area. The Great Lakes - St. Lawrence Region covers 6.5% and the Subalpine Region 3.7%. The Montane, Coast, and Acadian Regions each account for approximately 2% while the remaining Columbia and Deciduous Regions each represent less than 1%.

Boreal Forest Region. This Region comprises the greater part of the forested area of Canada. It forms a continuous belt from Newfoundland and the Labrador coast westward to the Rocky Mountains and northwestward to Alaska. White spruce and black spruce are characteristic species; other prominent conifers are tamarack which ranges generally throughout, balsam fir and jack pine in the eastern and central portions, and alpine fir and lodgepole pine in the western and northwestern parts. Although the Boreal forests are primarily coniferous, there is a general admixture of deciduous trees such as white birch and poplar; these are important in the central and south-central portions, particularly along the edge of the prairie. In turn, the proportion of spruce and larch increases to the north and, with the more rigorous climate, the close forest gives way to an open lichen-woodland which finally changes into tundra. In the eastern section, along the southern border of the Region, there is a considerable intermixture of species from the Great Lakes - St. Lawrence forest, such as eastern white pine, red pine, yellow birch, sugar maple, black ash and eastern white cedar.

Great Lakes - St. Lawrence Forest Region. Extending inland from the edges of the Great Lakes and the St. Lawrence River lies a forest of a very mixed nature which is characterized by eastern white pine, red pine, eastern hemlock and yellow birch. With these are associated certain dominant broadleaved species common to the Deciduous Forest Region, including sugar maple, red maple, red oak, basswood and white elm. Other species with wide ranges are the eastern white cedar and largetooth aspen and, to a lesser extent, beech, white oak, butternut and white ash. Boreal species such as white spruce, black spruce, balsam fir, jack pine, poplars, and white birch are intermixed, and red spruce is abundant in certain central and eastern portions. This Region extends in a westward direction into southeastern Manitoba but does not include the area north of Lake Superior.

Subalpine Forest Region. This is a coniferous forest located on the mountain uplands of Alberta and British Columbia, from the Rocky Mountain range through the interior of British Columbia to the Pacific Coast inlets. The characteristic species are Engelmann spruce, alpine fir and lodgepole pine. There is a close relationship between the Subalpine Forest Region and the Boreal Forest Region, which also shares black spruce, white spruce and trembling aspen. There is also some penetration of interior Douglas-fir from the Montane forest, and western hemlock, western red cedar and amabilis fir from the coastal forests. Other species are western larch, whitebark pine, limber pine and, on the Coast Mountains, yellow cypress and mountain hemlock.

Montane Forest Region. The Region occupies a large part of the interior uplands of British Columbia, as well as a part of the Kootenay Valley and a small area on the east side of the Rocky Mountains. It is a northern extension of the typical forest of much of the western mountain system in the United States, and comes in contact with the Coast, Columbia, and Subalpine Forest Regions. Ponderosa pine is a characteristic species of the southern portions. Interior Douglas-fir is found throughout, but more particularly in the central and southern parts; lodgepole pine and trembling aspen are generally present, the latter being particularly well represented in the north-central portions. Engelmann spruce and alpine fir from the Subalpine Forest Region, together with white birch, are important constituents in the northern parts. White spruce, although primarily Boreal in affinity, also grows here. Extensive prairie communities of bunch-grasses and herbs are found in many of the river valleys.

Coast Forest Region. This Region is part of the Pacific Coast forest of North America. Essentially coniferous, it consists principally of western red cedar and western hemlock, with Sitka spruce abundant in the north and Douglas-fir in the south. Amabilis fir and yellow cypress are represented throughout the Region and, together with mountain hemlock and alpine fir, are common at the higher altitudes. Western white pine is found in the southern parts, while western yew is in widely scattered groups. Deciduous trees, such as black cottonwood, red alder and bigleaf maple, have a limited distribution. Arbutus and Garry oak grow only on the southeast coast of Vancouver Island, the adjacent islands and mainland. The arbutus is a broadleaved evergreen. Both are species whose centres of population lie southward in the United States.

Acadian Forest Region. Over the greater part of the Maritime Provinces there is a forest closely related to the Great Lakes - St. Lawrence forest and, to a lesser extent, to the Boreal forest. Red spruce is a characteristic though not exclusive species, and associated with it are balsam fir, yellow birch and sugar maple, with some red pine, eastern white pine, jack pine and eastern hemlock. Beech was formerly a more important forest constituent than at present, but beech bark disease has drastically reduced its representation in Nova Scotia, Prince Edward Island and southern New Brunswick. Other species of wide distribution are white spruce, black spruce, red oak, white elm, black ash, red maple, white birch, grey birch and poplars. Eastern white cedar, although present in New Brunswick, is extremely rare elsewhere and jack pine is apparently absent from the upper St. John Valley and the western half of Nova Scotia.

Columbia Forest Region. A large part of the Kootenay Valley, the upper valleys of the Thompson and Fraser Rivers and the Quesnel Lake area of British Columbia contain a coniferous forest, called the Columbia Forest Region, which closely resembles the Coast Forest Region. Western red cedar and western hemlock are the characteristic species in this interior "wet belt". Associated trees are the interior Douglas-fir which has general distribution and, in the southern parts, western white pine, western larch, grand fir and western yew. Engelmann spruce from the Subalpine Forest Region is important in the upper Fraser Valley and is found to some extent at the upper levels of the forest in the remainder of the Region. At lower elevations in the west and in parts of the Kootenay Valley, the forest merges with the Montane Forest Region and in a few places borders directly on grassland.

Deciduous Forest Region. A small portion of the deciduous forest, which is widespread in the United States, extends into southwestern Ontario between Lakes Huron, Erie and Ontario. Here, with the deciduous trees common to the Great Lakes - St. Lawrence Forest Region, such as sugar maple, beech, white elm, basswood, red ash, white oak and butternut, are scattered a number of other deciduous species which have their northern limits in this locality. Among these are the tulip-tree, cucumber-tree, pawpaw, red mulberry, Kentucky coffee-tree, redbud,

black gum, blue ash, sassafras, mockernut hickory, pignut hickory, black oak and pin oak. In addition, black walnut, sycamore and swamp white oak are confined largely to this Region. Conifers are few but there is scattered distribution of eastern white pine, tamarack, eastern red cedar and eastern hemlock.

The Grasslands. Although not a forest region, the prairies of Manitoba, Saskatchewan and Alberta support several species of trees in great numbers. Trembling aspen forms groves or “bluffs” around wet depressions, and continuous dense stands along the northern boundary. Several other species of poplar are usually found along rivers and in moist locations, along with willows and some white spruce. There are sporadic stands of white birch, Manitoba maple, bur oak and ash. In British Columbia, where the grasslands are confined to deep valleys and low areas of the interior, there are scattered representations of ponderosa pine, birches, poplars, spruce and mountain alder.

10.1.1.2 Forest land

Inventories of the forest resources of Canada are made periodically by provincial forest authorities and, with their co-operation, the Canadian Forestry Service of the Department of the Environment compiles national statistics.

The 1968 National Forest Inventory reported an area of 1,244,291 sq miles of forest land (Table 10.1). Of this total, 26,616 sq miles are reserved by legislation for primary uses other than timber production. The remainder is divided into two categories — 919,208 sq miles suitable for regular harvest and 298,467 sq miles which cannot be harvested regularly because of slow regeneration and growth. Nevertheless, this second category is capable of producing trees of merchantable size and, as inventories are extended and refined, its area can be expected to increase. Currently, only 65% of the forest land of Canada has been inventoried in the sense of gathering statistically reliable information on area and forest cover.

Provincial Crown forest land constituted 69% of the non-reserved forest land of Canada, leaving 23% under federal jurisdiction and 8% in private ownership. Of the provincial forest land 69% is allocated to timber production and of the federal forest land less than 2% is so allocated. Although precise use of private forest land is a matter of speculation, individual studies and limited statistics suggest that timber production still predominates despite a tendency to convert some of this land to recreational use. At the time of the 1968 inventory 10% of the non-reserved forest land was considered inadequately stocked for timber production.

The estimates of volumes of timber, which are given by province in Table 10.1, are also subject to constant revision as more accurate and complete inventories are compiled. The volumes reported in the 1968 National Forest Inventory are smaller than those reported previously despite more extensive inventory coverage. This is the result of two factors — first, the 1963 inventory, which was the basis for previously presented information, provided rough estimates of timber volumes in Labrador and in the Yukon Territory and Northwest Territories but, in the absence of reliable data, these areas were not covered in the 1968 inventory; secondly, British Columbia adopted procedures whereby data on volume of mature timber only were compiled.

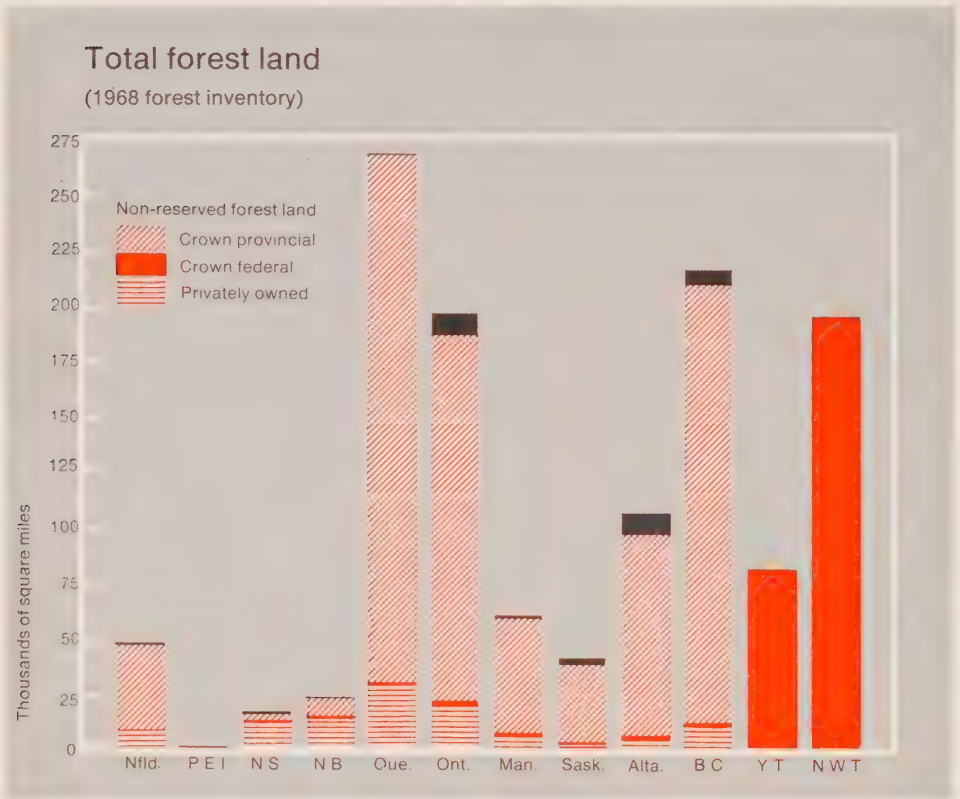
10.1.1.3 Canada's forest trees

There are approximately 140 recognized tree species in Canada, excluding the various subspecies and varieties. Of this number, 31 species are conifers or ‘softwood’, about two thirds of which are of commercial value; less than one fifth of the native broadleaved trees or ‘hardwoods’ can be considered as commercially significant.

The most abundant forest trees in Canada, in terms of standing timber, are the spruces, pines, true firs, poplars, hemlocks, birches, cedars, Douglas-fir, maples and larches. However, the economic importance of these species, except for the spruces, does not necessarily correspond to their abundance.

About one third of Canada's timber volume is spruce. White spruce and black spruce range from the Atlantic Coast almost to the Pacific and northward into Alaska. Sitka spruce, the largest of the native spruces, is found in the Pacific Coast area; Engelmann spruce is established farther inland, extending to the foothills of the Rockies in southwestern Alberta; and red spruce is found only in eastern Canada. Spruce is used extensively for pulpwood, lumber and plywood.

Among the pines, two species — jack pine and lodgepole pine — comprise 11% of Canada's standing timber. Jack pine grows from Nova Scotia to northern Alberta and the Northwest



Territories and lodgepole pine is found in western Alberta, British Columbia and Yukon Territory. Eastern white pine, which grows from the Atlantic to the eastern edge of the prairies, and western white pine produce valuable softwood lumber. Ponderosa pine, found in the drier areas of southern British Columbia, and red pine, found in eastern Canada, are important commercial species.

The four native firs are all commercial species, although balsam fir far outranks the other species in this regard. It is the only fir found in eastern Canada and ranges from Newfoundland through all the provinces except British Columbia. Alpine fir, essentially a high altitude tree, is found over a wide area in British Columbia and its range extends well into the western half of central Alberta and the Yukon. Amabilis fir is a west coast species, while grand fir is found in both the Pacific coastal areas and the interior of British Columbia. Fir is commonly cut as pulpwood and, to a lesser extent, as sawlogs.

Douglas-fir, one of Canada's best known commercial trees, is not a true fir. The tree responsible more than any other for British Columbia's world-wide reputation for timber is the coastal form of Douglas-fir which is dominant in the forests of the province's lower coastal areas. An interior form, known as blue Douglas-fir, is used on a large scale for lumber, plywood, construction timbers, piling and kraft pulp.

The poplars are the most abundant of the native broadleaved trees. They include trembling and largetooth aspen, balsam poplar, and the three cottonwoods. The most widely distributed is trembling aspen, followed by balsam poplar; both species occur from Newfoundland to Alaska. The largest of the native poplars is black cottonwood; its range covers the lower two thirds of British Columbia and extends well into Alberta to the east in a pattern that follows the natural drainage basins. It also reaches as far north as the Yukon along the coast. This species is in demand for veneer stock. Other cottonwoods — eastern cottonwood and its western form known as plains cottonwood, and narrowleaf cottonwood — have a much narrower distribution.

Hemlocks, ranking fifth in volume of standing timber, have considerable commercial importance. Western hemlock grows plentifully along the Pacific Coast and west of the Rockies in the interior wet belt of British Columbia. It is one of the principal timber-producing species in western Canada and is also an important source of pulpwood. Eastern hemlock is found from the Atlantic to western Ontario, although not in a wide or continuous pattern. It is used to produce a number of products including pulpwood, plywood and lumber. Mountain hemlock is found in British Columbia in parts of the coastal forest and in the heavier rainfall areas of the interior.

Of the six native birches, only two are of commercial importance — yellow birch and white birch. Most abundant is white birch which grows over a vast part of Canada from the Atlantic to the Pacific and extends up to the northern tree limit. One variety, western paper birch, reaches heights of 100 feet and diameters of three feet or more. Yellow birch is a valuable hardwood species used extensively for flooring, veneer and plywood. Its range extends from the Atlantic to Lake Superior.

The native trees commonly known as 'cedars' include the arbor-vitae (eastern white cedar and western red cedar), yellow cypress (yellow cedar) and a juniper (eastern red cedar). Together they make up an important group of commercial species. Eastern white cedar is found from Nova Scotia to Manitoba and as far north as James Bay in Quebec and Ontario. Its wood, which is light and resistant to decay, is used for posts, poles, boats and other purposes where timber is exposed to situations favourable to decay. Western red cedar is of major importance in British Columbia where it ranges from the Pacific Coast to the Rocky Mountains. It is used for lumber, exterior siding, shingles, poles and posts, doors, window sashes and other purposes where resistance to decay is required. Yellow cypress — commonly called yellow cedar or Alaska cedar — is found mainly in the Pacific Coast region where it grows down to sea level in the more northerly sections. As it extends farther south, it seeks higher elevations. Its wood, like that of the other cedars, is valued in situations where resistance to decay is needed.

There are ten native species of maple, six of which are of commercial value. Only two species are known as hard maples, producing wood that is both hard and strong — sugar maple and the closely related black maple. Sugar maple ranges from the Atlantic to Lake Superior, while black maple is found mainly in southern Ontario. Hard maple constitutes one of the most valuable commercial hardwoods in Canada. It is used for furniture, flooring, veneer, quality plywood, turnery and other specialized purposes where strength and hardness are needed. Sugar maple and, to a lesser degree, black maple are tapped for the maple sugar industry. Bigleaf maple is found on the lower Pacific Coast mainland and on Vancouver Island. The wood is only moderately hard and lacks strength but, owing to the limited local supply of hardwoods, this tree is of some importance for furniture and other specialized uses in the immediate area. Red maple and silver maple are eastern species. Red maple ranges from Newfoundland to western Ontario, while silver maple is concentrated mainly in southern Ontario and southwestern Quebec. Their wood is weaker and softer than that of the hard maples and these trees are not important timber producers. The Manitoba maple, ranging from Ontario across the southern parts of Manitoba, Saskatchewan and southeastern Alberta, produces a soft, moderately light wood that is low in strength. It is better known as a shelterbelt tree.

There are three species of larch in Canada. Two of them — eastern larch, better known as tamarack, and western larch — have commercial value. Tamarack is widely distributed from Newfoundland to the British Columbia - Yukon border and reaches far into the Northwest Territories. The wood is used for poles, posts, piling, boxes, crates and pulp. Western larch, found mainly in southeastern British Columbia, is one of the important timber-producing trees of western Canada. The wood, being hard and strong, is used mainly in construction but is also made into flooring, interior and exterior furnishings, and pulp.

Other trees of less commercial significance include oak, ash, beech, elm and basswood. Valuable as the wood of these species may be, it is usually obtainable in limited quantities only. However, the species may have considerable local importance and they also contribute greatly to the forest landscape.

Canada's better known species are the commercially exploited trees, but in the forest all species have a role to play in maintaining the ecological balance, controlling water run-off and preventing soil erosion, and also in providing a habitat for native fauna and recreational facilities for all who wish to enjoy them.

10.1.2 Forest depletion

The average annual forest depletion by cutting and fire is shown in Table 10.2 for the ten-year period 1960-69. The primary sources of Canada's current wood production are the areas of Crown forest land allocated to wood production and private forest land. These two ownerships constitute 434.8 million acres and, of that area, 1.8 million acres (based on 1968 information), or less than one fifth of 1%, were cut annually over the period shown and 593,000 acres, or about one tenth of 1%, were burned. On a volume basis, the average annual depletion from cutting was 3,649 MM cu ft, which may be compared with an estimated permissible cut on a sustained-yield basis of 8,481 MM cu ft from approximately the same areas of Crown and private land. In addition to cutting and fire, extensive forest depletion is caused by insects, diseases and natural mortality but no reliable estimates of these losses, either physical or economic, are available.

In aggregate, a large surplus of timber exists in Canada although there are shortages in some regions and shortages in some species which could be overcome by increased silvicultural and management inputs where such are considered to be economic. Also, greater utilization of individual trees and certain species could further extend the resource.

An unprecedented 9,253 forest fires burned a total of 2.6 million acres of valuable forest land across Canada in 1970 (Table 10.3). Despite the exceptionally heavy fire load, fire control organizations were successful in holding the acreage burned to a level only slightly above the corresponding ten-year average. Furthermore, the \$11.4 million in estimated fire damages compares favourably with the \$16.3 million average annual losses reported over the previous decade.

Through carelessness and incendiarism, man has been blamed for 64% of all forest fires reported in 1970 (Table 10.4). Lightning accounted for 3,299 fires or 36% of the annual total. This represents the highest percentage of lightning fires ever recorded in Canada.

10.1.3 Forest administration

10.1.3.1 Federal forestry programs

The federal government is directly responsible through several departments and agencies for the protection and administration of forest resources in the Yukon Territory and Northwest Territories and on other federal lands such as the national parks, Indian reserves, military areas, and forest experiment stations. In addition, there are important federal responsibilities with respect to the nation's forest resources as a whole. These responsibilities, which relate to forestry research and development and the provision of information and technical services, are defined and established by the Forestry Development and Research Act (1966) and the Department of the Environment Act (1970).

The primary federal organization concerned with forestry is the Canadian Forestry Service of the Department of the Environment. Heading this Service is a director-general who is responsible to an Assistant Deputy Minister of the Department. Reporting to the director-general are branch directors for program development, program operations, and forestry relations. The three directors are concerned respectively with: guiding and evaluating the long-term development of the Service's program; organizing, co-ordinating, and managing the annual research and services program; and with planning, co-ordinating, and directing the external and international program of forestry relations. Also responsible to the director-general is the head of the Forestry Information Section and an administrative officer in charge of the Administrative Services Section.

The program of the Canadian Forestry Service falls within six categories: forest resource research, development and services; forest products research, development and services; technical information and advisory services; public information; aid to universities; and special assignments.

Departmental programs in forestry research and development are described in Chapter 9, Section 9.2.4.

To promote improved management of forest resources and better forest products, the Canadian Forestry Service, through publications, workshops, seminars, etc., disseminates technical information to forest resource and wood processing managers. Forest advisory services are provided for federal departments and international agencies, and assessments are also made of operational trials and treatments conducted by resource organizations and

industry. In the forest products field, special testing services (unavailable commercially) are provided both for government and industry. The Service also participates in the development of codes and specifications for forest products.

Through its publications, press releases, films, displays and demonstration areas, the Service seeks to increase public awareness and understanding of forest values and to enlist support in the protection and wise use of the forest resource.

10.1.3.2 Provincial forestry programs

All forest land in provincial territory, with the exception of the minor portions in national parks, federal forest experiment stations, military areas and Indian reserves, is administered by the respective provincial governments. The forestry program of each province is outlined below.

Newfoundland. The forest resources of this province are geographically separated by the Strait of Belle Isle into two distinct regions — the island of Newfoundland and Labrador on the mainland.

The forest resources of Labrador are not fully known and are only now subject to a forest inventory which will not be completed for a few years. Previous estimates show that, of a total area of 112,826 sq miles in Labrador, approximately 21,000 sq miles are considered productive forest land. The total volume of wood in Labrador has been estimated at 60 to 70 million cords of black spruce and balsam fir.

A forest inventory has recently been completed for the island of Newfoundland. Of a total area of 43,359 sq miles, over 14,000 sq miles are classified as productive forest. This area supports a total gross volume of 99.5 million cunits of softwoods and hardwoods. The principal commercial species of trees are black spruce and balsam fir. White pine, white spruce, and white and yellow birch are of lesser commercial importance.

Forty-nine percent of the productive forest lands on the island has been leased to the pulp and paper industry while 37% remains under the direct jurisdiction of the Provincial Forest Service. Tenure of the remaining 14% is varied and includes federal and provincial parks, areas held under fee simple grants and municipal ownership.

The management and protection of the unoccupied Crown lands is the responsibility of the Provincial Forest Service which employs professional foresters and trained forest technicians to carry out a management program of forest inventory surveys, silvicultural programs in thinning, fertilization and reforestation, and access road construction to permit harvesting of mature and overmature timber. The fire protection division has rapidly expanded over the past decade; during the fire season more than 100 trained personnel are supported by an aircraft fleet of five Canso water-bombers, four helicopters, and three fixed-wing transport and spotter planes.

Administratively, the province is divided into four forest regions with headquarters in St. John's, Gander, Corner Brook and Goose Bay, each controlled by a regional forester who directs the activities of five district offices. Communications between field offices and headquarters are dependent upon telephone, radiotelephone, and telex installation. In recent years the network of fire towers is being phased out in favour of aerial patrols.

The forest industry in the province consists of two pulp and paper mills located at Grand Falls and Corner Brook, a liner board mill at Stephenville, and a particle board plant at St. John's. In recent years the sawmill industry has shown signs of expansion but it still falls short of satisfying provincial lumber consumption. The total forest industry is estimated to contribute approximately \$150 million annually to the gross provincial product.

Forest research is principally carried out by the Canadian Forestry Service, a Branch of the federal Department of the Environment.

Post high school education in forestry is available at Memorial University of Newfoundland and at the College of Trades and Technology (CTT). Memorial University offers a two-year diploma course in forestry and is affiliated with the forestry faculty of the University of New Brunswick. At the CTT students may obtain a diploma after successfully completing a two-year forest technology course.

Prince Edward Island. Roughly one third of Prince Edward Island's 2,184 sq miles of land is tree-covered. The wooded areas consist of scattered patches throughout the province with the greatest concentration in the eastern section. All of the woodland is privately owned except some nine sq miles of provincial forested Crown land.

The Forestry Branch of the Department of Agriculture administers all forestry matters in the province — reforestation, protection and woodlot improvement. The reforestation program has been increasing year by year, as many as one million trees being planted in one year on provincially owned and privately owned land. The Forest Nursery is being expanded and by 1975 will provide some 6 million trees annually.

The forest management programs include the provision of access roads into Crown land areas and woodlot improvement; improvement cuts act as demonstration areas for the public and for 4-H Forestry Clubs and Boy Scout and Girl Guide groups. Fire protection is not too serious a problem in this province as wooded areas are relatively small and scattered and are all accessible by road so that equipment can be rushed to the scene of a fire quickly and easily.

Nova Scotia. Of Nova Scotia's land area of 20,402 sq miles, 15,555 sq miles are classed as forested and most of the forested land is considered suitable for regular harvesting. Although 91% of the forest land in Canada is held by the Crown in the right of the federal and provincial governments, only 22% is so held in Nova Scotia.

Provincial Crown lands are administered by the Department of Lands and Forests through a staff of foresters and rangers. Extension personnel assist owners of small private woodlands. The Department administers the Lands and Forests Act as it pertains to all lands, and is responsible for forest fire suppression. Forest fire detection is facilitated through 35 observation towers and a six-plane aerial patrol service. In 1972, 568 fires burned 5,882 acres of forest. Ten fires exceeded 50 acres, and the largest covered 1,590 acres. Fire suppression crews and rangers with equipment are stationed throughout the province.

The forest industry is of prime importance to the economy of Nova Scotia, contributing directly or indirectly more than \$100 million to the gross provincial product annually. There are in operation some 350 sawmills of various types and sizes, one hardboard mill, two newsprint mills, one groundwood pulp mill, and one chemical pulp mill. These mills accounted for 151,000 Mfbm of sawn materials and consumed 937,000 cords of pulpwood in 1971, excluding 106,500 cords-equivalent of pulp chips from sawmill residues. In addition, 45,000 cords of pulpwood were exported and 6,800 cords of pit props, poles and pilings were produced.

The reforestation program, active since the 1930s, is being expanded as quickly as funds and staff permit. Experimental work on container planting, direct seeding, soil capability and site preparation continues. Efforts are being made to improve seed sources. Total softwood inventory as at July 1972 was 6.9 million seedlings and transplants.

Timber, pulpwood and Christmas trees are sold through public tender, and cutting on Crown lands is done under recommendation of resource managers of the Department of Lands and Forests. Management cruises, regeneration studies and experimental cuttings are conducted on Crown lands, and a program of operating these lands under long-term, integrated use management plans is under way. During 1971-72, 2,609 acres of Crown forest were thinned and improved, bringing the total acreage of Crown silvicultural treatments to 31,600 since 1965.

A provincial forest inventory, a continuous system designed to operate on a seven-year cycle, was in its second-to-last year in 1972 and plans were being made for the second inventory cycle. This will cover the province in ten years. The forest capability survey of the Canada Land Inventory was completed in 1971. Other forest capability studies are directed at yields, tree-breeding, and fertilization. A system of 1,750 permanent sample plots was completed to provide continuing data on growth and drainage. Aerial colour photography, begun on Cape Breton Island in 1969, is being extended to the remainder of the province.

Forest research is carried on by federal government agencies and by the Nova Scotia Research Foundation. Investigations cover stand improvement, tree nutrition, cutting methods, and insect and disease activities. Extension projects include fire prevention, a province-wide motion picture program, distribution of information on forest and wildlife conservation, promotion of the Christmas tree industry, a hunter safety program, woodlot improvement, preparation of material for the mass media, and technical assistance to sawmill operators.

New Brunswick. Of the total land area of New Brunswick (27,835 sq miles), approximately 87% is classed as forest land suitable for regular harvest of which the Crown, in right of the province, owns about 46%. About 2% is owned by the federal government and the remainder is

privately owned. The total volume of standing timber in the province is estimated at 20,400 MM cu ft; coniferous species make up 70% and deciduous species the remainder.

Protection from forest fires, the first requirement for forest conservation, is mainly the responsibility of the Department of Natural Resources which also carries out duties in connection with game management and protection, mines, water, and the administration of provincial Crown lands. A large-scale aerial spraying program to protect balsam fir and spruce from the spruce budworm has been carried on since 1952 by a Crown company sponsored by the federal and provincial governments and by representatives of the forest products industries. Forest management licences authorize operators to cut and remove forest products in accordance with forest management plans and cutting permits. Royalty is paid to the province when products are cut by the licensees.

New Brunswick does not maintain a forest research organization but co-operates with the Canadian Forestry Service in that field. The University of New Brunswick has also undertaken a small number of forest research projects in co-operation with the National Research Council, the provincial government and other interested organizations.

In the field of education, the University of New Brunswick offers undergraduate and graduate courses in forestry leading to BScF and MScF degrees. It is also responsible for the administration of the Maritime Forest Ranger School in conjunction with the governments of New Brunswick and Nova Scotia and with private industry. The forest extension services of the University assist both government and private agencies in the direction and planning of various forestry extension programs. The provincial Department of Agriculture and Rural Development also provides an expanding extension service to the owners of farm woodlots.

Quebec. Forests with economic potential cover 298,000 sq miles, about 50% of the total area of the province. This forest-cover stretches northward to an irregular line near 52°N on the east and 54°N on the west of the province.

These forests may be divided into two separate tenure groups — private forests and public forests. Private forests cover an area of 27,900 sq miles. Public forests cover 270,300 sq miles of which 180,200 sq miles are under management; of the remaining 90,000 sq miles, 31,600 sq miles are considered highly productive although still inaccessible. Public forests carry a volume of almost 93,900 million cu ft of standing timber of various species; private forests contain 16,600 million cu ft. Coniferous species make up 78% of the total volume. Public forests under management and private forests supply the pulp and paper mills and the sawmills of Quebec. Private forests account for about 25% of the annual cut (about four million cunits). Quebec forests account for approximately 25% of the gross provincial product.

Management of public forests and assistance to private forestry is carried out by the Forestry Branch of the Department of Lands and Forests which controls development and the use of woodlands, and undertakes conservation measures. Principal management controls are: the annual inventory of some 30,000 sq miles of forest land; study and regulation of silvicultural practices for this area and the zoning of the land for its best use; and restoration of lands destined for forestation by replanting or by proper treatment — to achieve this Quebec maintains some 100 million plants in nursery stock. Regulations governing the use of the forests cover operational control, the issuance of permits for establishment of mills and cutting permits, measurement of wood harvested on Crown land, aid to development of private forests, and building and maintenance of forest roads. Through regional conservation groups, this branch is responsible for forest protection against insects, fire and fungus attack.

Ontario. Forested land in Ontario amounts to 188,334 sq miles, of which 180,588 sq miles are classified as forest land bearing or capable of bearing timber of a commercial character suitable for regular harvest and not withdrawn from such use. About 90% of this forest land is owned by the Crown, administered and managed by the Ontario Ministry of Natural Resources.

The Ministry of Natural Resources came into being April 1, 1972 as a result of a major restructuring of the government of Ontario. The goal of the Ministry is separated into three programs: Land Management, Outdoor Recreation and Resource Products.

Principal Divisions with their constituent Branches are: Forests (Forest Research, Forest Management, and Timber Sales); Mines (Geological, Mineral Research, Mineral Resources, Mines Engineering); Fish and Wildlife (Commercial Fish and Fur, Fish and Wildlife Research, Sport Fisheries, and Wildlife); Parks (Historical Sites, Park Management, Park

Planning); Finance and Administration (Administrative Services, Financial Management, Information, Legal Services, Northern Affairs, and Personnel); Lands (Lands Administration, Land Use Co-ordination, and Surveys and Mapping); Field Services (Air Service, Forest Fire Control and Engineering Services). There is also a Conservation Authorities Branch and a Policy Research Branch.

One of the objectives of the new organization is to serve the public more effectively through decentralization to regional and local levels. Four groups are established within the Ministry: Resources and Recreation; Lands and Waters; Northern Ontario; and Southern Ontario. The first two groups are primarily concerned with policy development while the others are primarily concerned with policy implementation.

The Forest Management Branch is responsible for the regeneration, tending and improvement of the forests on Crown lands, Agreement Forests and private land under the Woodlands Improvement Act. In addition, the Branch has the important task of promoting forestry on privately owned lands through its extension program.

The Branch operates ten forest tree nurseries (with supporting tree seed collection, treatment and storage plant) with a current production target of about 80.5 million trees. Complementing this are up-to-date tree improvement and nursery soil management programs. The Branch, directly or indirectly, supervises all planting projects on Crown lands but regeneration agreements have been signed with all major licensees under which the latter assume responsibility for planting projects and are paid at an agreed rate for work completed. Other work, such as site preparation for planting, may be performed by the companies under the same agreement.

During 1971, 60.5 million nursery-produced trees were planted on about 80,300 acres of Crown and Agreement lands, and 9.9 million tubed seedlings were planted on about 9,950 acres. Other silvicultural treatments included the direct seeding of 22,200 acres, treatment for natural regeneration on 57,250 acres and stand improvement (cleaning, spraying, thinning, pruning, etc.) on 88,100 acres. In all, 257,800 acres of Crown and Agreement lands were silviculturally treated in 1971 to promote regeneration or to improve the forests.

Owners of private land may purchase planting stock for forestry purposes from government nurseries at nominal prices and may also receive free professional advice on any forestry matter, including silviculture, harvesting and marketing. In 1971 (spring and fall), planting stock furnished for private lands totalled 15.7 million units. Under the Woodlands Improvement Act, it is possible to have planting and improvement work carried out completely under government direction and mainly at public expense. Since its inception in 1966, the program has provided assistance for 128,700 acres (as at April 1, 1972) of privately owned land.

For half a century, Ontario has had enabling legislation that permits municipalities and, within the past 20 years, conservation authorities to place abandoned and submarginal agricultural lands to which they have acquired title under agreement with the Ministry, which undertakes to plant and manage the properties for a specified period of between 20 and 50 years. Nearly 245,000 acres under such agreements are managed intensively and the older plantations are receiving regular thinnings. The trees removed are in demand for pulpwood, posts, poles and sawlogs, making the undertakings financially attractive. In addition, properties close to centres of population have acquired tremendous value as recreational areas.

The Timber Sales Branch co-ordinates and supervises preparation of management plans for Crown management units and approves the plans prepared for company management units. Forest inventory requirements and priorities for such plans are determined by the Branch. As at March 31, 1972, 203 plans (86 Crown units, 57 company units and 60 Agreement forests) were completed or in process of completion for approximately 190,900 sq miles. Forest access is most important in the implementation of management plans and the forest access roads program is part of the Branch's responsibilities.

The Branch arranges for the orderly sale and disposition of timber and the measurement (scale) of the products removed. Sawmills are licensed and directories prepared. Information is collected and analyzed on the production, transportation and marketing of timber and the data provided to the forest industry.

The Forest Fire Control Branch is responsible for the area under organized forest protection in Ontario totalling 180,275 sq miles and including the main central band of accessible forests. This area is organized into 20 fire districts and subdivided into 50 chief

ranger divisions. South of this area, in the highly developed agricultural counties, municipalities are responsible for fire control. The vast inaccessible areas to the north of the fire districts, totalling over 134,000 sq miles, do not support significant stands of merchantable timber and, except for communities or other special values, are not protected. Within the fire districts, agreements were in effect in 1970 with 200 municipalities for the prevention and control of forest fires. An agreement was also in effect with the federal government for fire protection of 958,000 acres of Indian lands in the province.

Organized forest fire detection is accomplished by aerial patrol or combined aerial patrol and lookout tower systems, although towers are quickly being phased out in favour of aircraft. Public reporting of forest fires (unorganized detection) continues to be an important and very necessary part of the over-all detection program. The basic fire-fighting strike force comprised 135 trained, five-man fire crews and 42 fire-bombing aircraft. These forces, with the aid of timber operators, municipal fire brigades and the general public in some instances, provided the initial attack on the 1,604 fires that occurred in 1972.

Fire-bombing aircraft provided initial attack on 283 fires. Those aircraft dropped 130,938 gallons of water and long-term retardant which has proven to be an effective operational tool. Avengers and a Tracker provided the main long-term retardant delivery system. Water-based aircraft can also deliver long-term retardant in Ontario. Prescribed burning as a silvicultural and hazard reduction tool was continued in 1972 with five burns covering 2,455 acres.

An integral float tank water-bombing system is installed on float-equipped aircraft. The aircraft fleet, as at January 1, 1973 comprised 25 Turbo Beavers, ten Otters, Three Twin Otters, one Beechcraft Duke and one Beechcraft KingAir 100; six Grumman G-89 Tracker air tankers; one Jet Ranger, one Hughes 500 and one G-4-A helicopter were leased for the fire season. Five more G-4-A helicopters were available to the Ministry as required. The communications system included 186 ground stations, 277 lookout tower radios, 20 patrol vessel radiotelephones, 674 mobile radiotelephones, 1,344 portable fireline radios, 41 aircraft radio installations and 74 portable aircraft radiotelephones.

Forest pest problems in 1971 were again dominated by the spruce budworm which infested over 13 million acres but spraying operations to control this insect were limited to 80,000 acres, in four separate high-value local areas. Smaller acreages on Crown owned and Crown managed areas totalling 15,000 acres were also treated for white pine weevil, pine and spruce sawflies, white grubs, white pine blister rust, annosus root rot, and mice.

Manitoba. The administration of provincial Crown forest lands in Manitoba is the responsibility of the Department of Mines, Resources and Environmental Management which consists of a Resources Management Division, a Mines and Departmental Services Division, an Environmental Management Division and a Water Resources Division. A special planning section is charged with developing short- and long-range forestry plans and programs relating to the forest inventory, timber utilization and industrial development, reforestation, silviculture and forest protection.

The Research Branch of the Environmental Management Division undertakes the necessary practical research for the qualitative development of these programs and the various projects and activities within them. The Branch co-operates with several federal services which maintain two research areas in the province and works closely with federal authorities in investigating and controlling forest damage resulting from insects and diseases.

The Resources Management Division is charged with the administration of the Forest Act and Regulations, and the implementation of forestry programs and projects developed. It also provides considerable input with respect to plans developed for specific areas within the four regions into which the province is divided, each headed by a regional director responsible for the field administration of the forests and other resources in the region. Policy guidelines are established by head office which co-ordinates control measures for the propagation, improvement and management of the forests, for the harvest of forest products, and for forest inventory surveys. A provincial forest nursery is maintained to supply stock for reforestation of denuded Crown land and some natural seed areas have been established for nursery stock. Seedlings are supplied to farmers for woodlots and to commercial Christmas tree producers; an average of more than 4 million are planted each year in reforestation projects on Crown lands. Conventional planting programs are being reduced and reforestation of cutover lands is being achieved by scarification and seeding. The program of forest stand improvement comprises thinning, clearing and chemical spraying to remove undesirable species and

encourage growth of preferred trees. Forest inventories cover about 10,350 sq miles annually and, on the basis of these inventories, working plans with annual allowable cuts on a management unit basis are in operation.

Timber-cutting rights are awarded by forest management licences, timber sales and, in certain cases (particularly for salvage operations), by timber permits. Forest management licences may be granted for periods of up to 20 years and are renewable; timber sales may be for varying periods from one year upward and timber permits for periods of up to one year. In 1972, one long-term pulpwood berth with an area of 2,745 sq miles was in force together with four long-term timber berths, all granted prior to 1930. A second long-term pulpwood berth agreement was signed in 1966, covering the construction of a pulpmill and sawmill at The Pas in northern Manitoba.

There are 128,370 sq miles of the province under forest care protection, with zones of priority established in the less accessible areas. Fires are detected through a comprehensive network of lookout towers and supporting air and ground patrols, all in communication by radio and departmental or public telephones. Seven twin engine and one single engine aircraft supplement the tower fire detection system. Approximately 90,000 sq miles are covered by these aircraft. Two Canso water-bombers and three helicopters, two Turbo Beavers and two single engine Otter aircraft are contracted for the fire season to provide an aerial fire suppression force.

Public education in the fields of fire prevention and forest conservation is carried out through extensive use of radio, television, newspapers, pamphlets, signs, film tours and talks.

The Mines and Departmental Services Division provides accounting and clerical services for the other two divisions, and is responsible for issuing permits, licences and leases relative to forestry projects and activities.

Saskatchewan. The forests of Saskatchewan cover 117,738 sq miles of which 40,500 sq miles are productive forest land and 38,206 sq miles are suitable for regular harvest. Provincial forests constitute approximately 92% of all forest land in the province and are managed and developed by the Forestry Branch of the Department of Natural Resources.

The Forestry Branch, consisting of three sections — forest management, inventory and silviculture — develops and evaluates forest policies and management programs which are carried out by the various regional administrative authorities. For purposes of resource administration, the province is divided into six regions, each directed by a superintendent. The regions are subdivided into conservation officer districts which vary in size according to resource base and population to be served. Close liaison is maintained between the Forestry Branch and the various regional authorities.

Development of techniques in prevention, detection and suppression of forest fires is a function of the Support Services Branch, which is composed of three sections — fire control, heavy equipment and communications. A network of 75 lookout towers equipped with two-way radios is maintained throughout the province and is supplemented by aircraft on regular patrol duty during high-hazard periods. The Department of Natural Resources communication system is being converted to VHF. Approximately 1,400 two-way radio sets, operated in towers, vehicles, aircraft and bush camps, are used for the detection and suppression of forest fires; six helicopters and eight fixed-wing aircraft capable of water-dropping provide aerial support. Outside help may be requested when available and necessary.

Alberta. The 148,167 sq miles of forest lands in Alberta include 106,755 sq miles which are considered productive. The Alberta Forest Service of the Department of Lands and Forests through its six Branches (Administration, Timber Management, Forest Protection, Construction and Maintenance, Land Use and Training) is responsible for their administration. Jurisdiction is decentralized into ten Forests, each responsible for the forest area within its boundaries. Each Forest is under the control of a superintendent, supported by specialists in the fields of timber management, fire, land use, construction and communications, as well as by other clerical and casual staff. These Forests are further subdivided into Ranger Districts under a district forest officer responsible to the superintendent. District officers may have several assistant rangers, in addition to other staff, under their charge.

The Timber Management Branch is responsible for implementation and supervision of the timber quota system, acceptance and approval of management and annual operating plans

prepared for leased and licensed Crown lands, preparation and execution of forest management plans, and disposal of Crown timber. The Branch also carries on silvicultural programs, processes applications, takes inventories of forest resources, inspects cutting areas to ensure proper logging and utilization practices, and collects dues and fees.

The Forest Protection Branch is in charge of all phases of protection including prevention, detection and suppression of wild fires. This Branch includes a number of specialists such as a meteorologist, a telecommunications officer and an Aircraft Dispatch Section to assist in the over-all protection program.

The Construction and Maintenance Branch constructs and maintains all road, airstrip and building facilities within the area of the Service's jurisdiction and administers and operates three licensed public airports.

The Forest Land Use Branch is responsible for the planning and supervision of proper land-use practices in the forested area, including grazing, recreation and watershed management, particularly on the east slopes of the Rocky Mountains containing the North and South Saskatchewan rivers. The Forestry Training Branch provides facilities and instructions for the second year of a two-year forest technology course given by the Northern Alberta Institute of Technology. It also conducts in-service training programs for all the Branches in the Forest Service and other divisions of the Department.

Basic research in all phases of the forestry program is generally carried out by the Canadian Forestry Service. A new federal research laboratory has been completed in Edmonton to improve the research service that is provided.

British Columbia. Of the 366,255 sq miles in British Columbia somewhat over 215,744 sq miles are inventoried as forest land. This includes 276,068 MM cu ft of mature merchantable timber, most of it coniferous species.

For administrative purposes, the province is divided into six Forest Districts with regional headquarters at Vancouver, Prince Rupert, Prince George, Kamloops, Williams Lake, and Nelson. Further decentralization of authority is effected by subdivision into Ranger Districts, of which there are 101 throughout the province. Ten directional, servicing or policy-forming Divisions constitute the head office of the Forest Service at Victoria.

Efforts continue to bring British Columbia's forest resources under sustained-yield management and the forest industries are making progress toward more complete utilization of their raw materials. The problem is urgent despite the fact that, with a present annual scale of approximately 1,997 MM cu ft (1971), the total inventory would appear sufficient to support current needs in perpetuity. One of the more spectacular results of sustained-yield administration has been the swinging of a greater proportion of the annual forest harvest to the interior of the province. In 1971, the wet belt forests on the coast accounted for about 50.1% of the total forest cut and the interior for 49.9%. For all practical purposes, the entire interior forest is publicly owned; a large proportion of the privately owned, leased or licensed forests are on the coast.

Several systems of timber disposal are in effect. The Tree Farm Licence is a contract between the government and a company or individual whereby the latter agrees to manage, protect and harvest an area of forest land, including any privately held forest land, on a sustained-yield basis. Tree Farm Licences are subject to re-examination for renewal every 21 years. Public Sustained-Yield Units are areas within which the Forest Service manages the Crown timber on a sustained-yield basis. Within the Public Sustained-Yield Units, recognized established logging operators can apply for Timber Sale Licences or Timber Sale Harvesting Licences which entitle them to log at a given rate per year, based on a number of factors including the operator's average rate of production at the time the unit was established.

Forest fire prevention techniques and organization for effective forest fire suppression are vital aspects of planned sustained-yield management. Extensive use is made of aircraft under various terms of contract. Air tankers and fire-spotter aircraft are employed during the fire season and helicopters and other aircraft are employed under contract for patrol duties and for the transport of fire suppression crews. The rugged topography and the many remote and sparsely populated areas of the province demand the availability of a variety of transportation methods to achieve early discovery of and attack on forest fires.

Close liaison with the Forest Branch of the federal Department of the Environment through facilities at Victoria provides detailed information on insect and fungal enemies of the forest and on fire research.

10.1.4 Statistics of forest industries

This Section is concerned with the many industries engaged in the felling of timber and its transformation into a variety of products required in modern living. The extensive forests of Canada provide raw materials for several large and growing primary industries: sawmills and planing mills, shingle mills, veneer and plywood mills, particle board plants and pulp and paper mills, which in their turn provide raw materials for a wide range of secondary industries that convert the products of the primary industries into more highly manufactured goods such as sash, doors, millwork, wooden boxes, furniture, converted papers and paper goods. However, much of the output of the primary forest industries is exported; the sawmill industry and the pulp and paper industry, especially, contribute substantially to the value of the export trade of Canada and thereby provide an important part of the foreign exchange necessary to pay for the imports from other countries.

Statistics of manufacturing activity and total activity of the wood industries and the paper and allied industries may be found in Chapter 17.

10.1.4.1 Logging industry

The forests of Canada provide the raw materials for its sawmills and planing mills, shingle mills, veneer and plywood mills, particle board plants and pulp and paper mills as well as roundwood for export in unmanufactured state and other products such as fuelwood, poles and piling, fence posts, mining timber and Christmas trees. Tables 10.5 and 10.6 give the estimated quantities of wood cut in Canada, by province and by type of product, for 1968-70. The total volume of wood cut declined slightly from 4,304 MM cu ft in 1969 to 4,288 MM cu ft in 1970.

10.1.4.2 Wood industries

The standard industrial classification subdivides the wood industries group into the following industries: sawmills and planing mills, shingle mills, veneer and plywood mills, sash, door and other millwork plants, hardwood flooring mills, manufacturers of prefabricated buildings, wooden box factories, the coffin and casket industry and miscellaneous wood industries. The latter item is further subdivided into the wood preservation industry, the wood handles and turning industry, particle board, and miscellaneous wood industries.

The sawmills and planing mills, the shingle mills, the veneer and plywood mills and the particle board plants (the latter are included in the miscellaneous wood industries group) use mainly roundwood as a raw material and sometimes are called primary wood industries; they are dealt with separately below. The other industries, which constitute the secondary wood industries, further manufacture part of the production of the primary wood industries into a great variety of products. However, most of the production of the primary wood industries is not further processed.

Sawmill and planing mill industry. Lumber is by far the most important single commodity in this industry and British Columbia is the most important province in this field. The total value of shipments of establishments classified to this industry in 1970 amounted to \$1,135.4 million of which lumber accounted for \$925.4 million; shipments of lumber from British Columbia alone amounted to \$632.2 million (Tables 10.7 - 10.8).

In addition to the lumber produced by the sawmill and planing mill industry a small amount is produced by establishments classified to other industries bringing total lumber production in Canada in 1970 to 11,263 MMfbm compared with 11,535 MMfbm in 1969.

Shingle mill industry. Most of the shingles and shakes produced in Canada are from British Columbia mills. All establishments in this classification reported shipments of 1,971,650 squares of shingles and shakes valued at \$31.5 million in 1970. British Columbia alone accounted for 1,831,980 squares valued at \$30.1 million. However, it should be mentioned that considerable quantities are produced by establishments classified to other industries and by individuals intermittently operating one or two shingle machines or producing by hand; although no adequate measure of this production is available, it is known to contribute significantly to the total. Of the total production in 1970, 2,202,526 squares were exported, of which 2,166,289 squares went to the United States.

Veneer and plywood industry. The production of hardwood veneer and plywood in Canada is confined largely to the eastern provinces and the production of softwood veneer and plywood almost entirely to British Columbia. For the latter, Douglas-fir is most commonly utilized because of the availability of large-diameter logs of this species from which large sheets of

clear veneer can be obtained. Of the hardwoods, birch is by far the most important species. Although most of the raw materials for this industry are of Canadian origin, some decorative woods are imported, particularly walnut.

Most of the production of softwood veneers is further manufactured into softwood plywood by Canadian mills. Some of the hardwood veneers are also shipped to other veneer and plywood mills in Canada for further manufacture or to other industries such as the furniture industry for veneering purposes but a significant portion is exported. Total exports in 1970 amounted to 768,339 M sq ft valued at \$24.8 million, of which 684,229 M sq ft valued at \$19.3 million went to the United States.

Most of the plywood is consumed in Canada although exports are not unimportant. In 1970 these amounted to 23,223 M sq ft of hardwood plywood valued at \$3.5 million and 601,444 M sq ft of softwood plywood valued at \$41.6 million. The greater part of the exports of hardwood plywood went to the United States (16,880 M sq ft valued at \$2.8 million) but most of the softwood plywood exports went to Britain (424,895 M sq ft valued at \$29.2 million). Quantity and value of veneer and plywood shipments for 1968-70 are given in Table 10.9.

10.1.4.3 Paper and allied industries

The standard industrial classification subdivides the paper and allied industries group into the following industries: the pulp and paper industry, the asphalt roofing manufacturers, the paper box and bag manufacturers, and other paper converters. Statistics of manufacturing activity and total activity of the paper and allied industries group are given in Chapter 17.

Pulp and paper industry. This industry is by far the most important of the group. For many years it has been the leading industry in Canada contributing about 2% of the total gross national product and 12.5% of the total value of the country's exports in 1970. In that year there were 139 pulp and paper mills in operation.

These mills consume enormous quantities of roundwood: 17,070,687 cunits with a cost value of \$582.3 million being so used in 1970. In that year, 107,100 cunits of pulpwood were imported and 929,900 cunits were exported. In addition, pulp and paper mills use wood residues of the sawmill and other industries for pulping such as cores of peeler logs, slabs and edgings or wood chips, shavings, and, recently, sawdust. The total of such wood residues used by the industry in 1970 amounted to the equivalent of 6,140,330 cunits of pulpwood, valued at \$152.2 million. The industry also consumes large amounts of electric power, chemicals and other goods and services and requires large quantities of clean water.

Some of the production of the pulp and paper industry is consumed in Canada or serves as a raw material for the paper-using or secondary paper and allied industries and certain other industries, but a great part of it is exported, particularly newsprint and various types of pulp, most of it to the United States. Some plants included in the pulp and paper industry classification also convert basic paper and paperboard into more highly manufactured papers, paper goods and boards but their output represents only a small part of Canada's total production of converted papers and boards. Table 10.10 gives shipment and production figures for pulp and Table 10.11 gives shipments of basic paper and paperboard for 1968-70.

Table 10.12 shows exports of pulp and newsprint for 1968-71. Canada, the US, Finland, Norway and Sweden together produced 70.5% of the world supply of pulp in 1969. Seven countries, Canada, the US, Japan, Finland, the USSR, Sweden and Britain, accounted for over 82% of the estimated world production of newsprint in 1970, with Canada contributing over 38%.

Asphalt roofing manufacturers. These establishments produce composition roofing and sheathing, consisting of paper felt saturated with asphalt or tar and, in some cases, coated with a mineral surfacing. Their total shipments in 1970 were valued at \$39 million.

Paper box and bag industries. These industries include manufacturers of folding cartons and set-up boxes, manufacturers of corrugated boxes and manufacturers of paper bags. Their total shipments in 1970 amounted, respectively, to \$182.8 million, \$281.8 million and \$191.8 million, compared with \$174.6 million, \$274.1 million and \$184.4 million, respectively, in 1969.

Other paper converters. This group produces a host of paper products such as envelopes, waxed paper, clay-coated and enameled paper and board, aluminum foil laminated with paper or board, paper cups and food trays, facial tissues, sanitary napkins, paper towelling and

napkins, toilet tissue, etc. The total value of manufacturing shipments of this industry in 1970 amounted to \$384.3 million compared with \$365.9 million in 1969.

10.2 Fisheries

The federal government has full legislative jurisdiction over the coastal and inland fisheries of Canada, and all laws for the protection, conservation and development of these fisheries resources are enacted by Parliament. The management of fisheries is, however, shared with provincial governments to which certain administrative responsibilities have been delegated.

The federal Department of the Environment exercises responsibility for the management of all fisheries, both marine and freshwater, in Nova Scotia, New Brunswick, Newfoundland, Prince Edward Island, the Yukon Territory and Northwest Territories. In Ontario, Manitoba, Saskatchewan and Alberta the management of all fisheries is conducted by the provincial governments. In Quebec, the provincial government manages both marine and freshwater fisheries, but the inspection of fish and fishery products produced for sale outside the province is carried out by the federal Department of the Environment, as it is in all other provinces. In British Columbia, the fisheries for marine and anadromous (fish that migrate to the sea from fresh water) species are managed by the Department of the Environment, but the provincial government manages its freshwater fisheries. In the national parks the fisheries are managed by the Canadian Wildlife Service, Department of the Environment.

Licences for sport fishing in all provinces are distributed by the respective provincial government which retains all revenues so collected. Sport fishing licences in the Yukon Territory and Northwest Territories are distributed by the federal Department of the Environment.

The mutual interest of federal and provincial governments in fisheries problems is recognized in the undertaking of joint studies and programs, frequently on a regional basis. Regional committees established in recent years have brought together representatives of all governments concerned for periodic discussion. Three groups have evolved: the Federal-Provincial Atlantic Fisheries Committee consisting of representatives of the federal government and of the governments of New Brunswick, Newfoundland, Nova Scotia, Prince Edward Island and Quebec; the Federal-Provincial Freshwater Fisheries Committee comprising representatives of the federal government and of the governments of Ontario, Alberta, Manitoba and Saskatchewan; and the Federal-Provincial British Columbia Fisheries Committee.

Sub-committees make recommendations for industrial development, research and marketing problems. The main committee in each case co-ordinates, where practicable, all activities in the respective fields of responsibility of its members and suggests to the respective governments means of carrying out fisheries programs and projects of common concern. These include the development of methods and techniques in the catching of fish and of shore and plant facilities, and studies of the economics of fisheries to ensure that any proposed program of development is soundly based.

10.2.1 Federal government activities

The work of the federal government in the conservation, development and general regulation of the nation's coastal and freshwater fisheries is performed, under the Minister of the Environment, by the Fisheries and Marine Service which incorporates the staff of the Fisheries Research Board, and the Fisheries Prices Support Board. The functions of the Fisheries Research Board are covered in Chapter 9, Section 9.2.4.

The Fisheries and Marine Service. Canada's Fisheries and Marine Service, a component of the federal Department of the Environment, is responsible for the over-all management of the fisheries resources of the nation's coastal and inland waters. Jurisdiction over fisheries is exclusively federal under Canada's constitution, the British North America Act, 1867, although, as stated above, management responsibilities in fisheries have been delegated over the years to some provinces. The importance of the federal role in fisheries is emphasized in a clause of the Government Organization Act, 1970 designating the Minister of the Environment as also the Minister of Fisheries of Canada.

Two distinct but closely related elements are combined within the present Fisheries and Marine Service: the operating branches responsible for fisheries management and development programs, and the Fisheries Research Board of Canada, concerned with research

programs aimed at conserving and enhancing aquatic renewable resources and maintaining the biological fitness of the aquatic environment; and the Marine Sciences Directorate responsible for providing charting, scientific services and information on the marine environment. In addition, several appointed public corporations and boards are involved in activities closely aligned with those of the Fisheries and Marine Service, including the Fisheries Prices Support Board, the Canadian Saltfish Corporation and the Freshwater Fish Marketing Corporation.

General direction of the Fisheries and Marine Service is provided by a small headquarters staff at Ottawa headed by a Senior Assistant Deputy Minister. Operations offices, administered by regional directors, are located at Vancouver, BC, Winnipeg, Man., Quebec, Que., Halifax, NS, and St. John's, Nfld. Research institutes and laboratories are located at a number of locations throughout Canada.

International fisheries. Many of the deleterious effects of man on his aquatic resources are outgrowths of historical practice, insufficient knowledge, multiple uses of water, social and economic conditions, and national and international competition. Problems under national control are corrected as conditions warrant but many resources are shared with other nations and must be managed jointly.

Canada co-operates with many other nations in obtaining scientific data and formulating management proposals required to ensure the rational development and conservation of fisheries of common concern through membership in nine international fisheries commissions and one international council. These international organizations are established under the terms of formal conventions and assume responsibility for the investigation of specific living marine resources in the defined areas to which the terms of the respective conventions apply. Canadian representatives on these international bodies are appointed by Order in Council and include officials of the Department of the Environment and members of the fishing industry. Canada is a party to the following: the *Convention between Canada and the United States of America for the Preservation of the Halibut Fishery of the Northern Pacific Ocean and Bering Sea*; the *Convention between Canada and the United States of America for the Protection, Preservation and Extension of the Sockeye Salmon Fisheries in the Fraser River System* (pink salmon added subsequently by protocol); the *International Convention for the High Seas Fisheries of the North Pacific Ocean*; the *Interim Convention on Conservation of North Pacific Fur Seals*; the *International Convention for the Northwest Atlantic Fisheries*; the *Convention on Great Lakes Fisheries between Canada and the United States of America*; the *International Convention for the Regulation of Whaling*; the *Convention between the United States of America and the Republic of Costa Rica for the Establishment of an Inter-American Tropical Tuna Commission*; the *International Council for the Exploration of the Sea*; and the *International Convention for the Conservation of Atlantic Tunas*.

As evidence of its support for international consultation and co-operation in fisheries, Canada maintains active membership in the Committee of Fisheries of the Food and Agriculture Organization of the United Nations and in the Codex Alimentarius Commission which is concerned with world food quality standards.

In addition to co-operating with other nations to conserve high seas fisheries resources through international agreements, Canada has taken further action to protect the in-shore fisheries in the coastal areas by establishing a 12-mile territorial waters limit and certain defined fishing zones. Canada excludes from these areas the fishing vessels of other nations except those having traditional fishing interests. Negotiations have been initiated with these latter countries to phase out their fishing operations in Canada's Territorial Sea and Fishing Zones. Canada also enters into bilateral agreements as necessary to overcome specific fisheries problems.

The Fisheries Prices Support Board. Established under the Fisheries Prices Support Act of 1944, the Fisheries Prices Support Board is responsible for investigating and, where appropriate, recommending government action to support prices of fishery products where declines are experienced. The basic principle of the legislation is to protect fishermen against sharp declines in prices and consequent loss of income due to causes beyond the control of the fishermen. The Board is responsible to the Minister of Fisheries and consists of a chairman, who is a senior officer of the Fisheries and Marine Service of the Department of the Environment, and five members chosen from the fishing industry in the various fishing regions of Canada.

The Board has the authority to buy quality fishery products under prescribed conditions and to dispose of them by sale or otherwise, or to pay to producers the difference between a price prescribed by the Board and the average price the product actually commands. The Board has no power to control prices other than its purchase policy nor has it any jurisdiction over operations in the fishing industry or the fish trade. Money necessary for dealings in fishery products is available to the Board from the Consolidated Revenue Fund to a maximum amount of \$25 million annually on recommendation of the federal Treasury Board and authorization of the Governor in Council.

The government authorized the Board to operate a groundfish price stabilization program in 1971 designed to forestall distress selling in normal markets while ensuring fair returns to primary producers and processors. Since market conditions remained buoyant, it was not necessary for the Board to acquire fishery products but the fact that a program was in place contributed in maintaining orderly marketing conditions.

Since 1966 the Fisheries Prices Support Board has operated yellow perch price stabilization programs. Under the 1971 program the Board acquired 198,000 pounds of perch fillets at 40 cents per lb. All product was returned to the supplier by the end of the fiscal year at cost. This program provided some market stability for this product and operated without loss to the Government of Canada.

In 1971, a deficiency payment program was authorized for the 1970 salt cod production to ensure that the prices paid to fishermen approximated those of the previous year. Payments to fishermen under this program were actually made during the fiscal year 1971-72, after the final settlement to the fishermen by the Canadian Saltfish Corporation had been established. During the 1971-72 fiscal year, 4,572 individual payments were made to fishermen for a total expenditure of \$244,986.

To assist in meeting food fish requirements for the World Food Programme and the Canadian International Development Agency, the Board has acted as purchasing agent for canned fish products. During the year the Board acquired 168,641 cases of canned mackerel and 174,639 cases of canned herring.

To enable the Atlantic Coast groundfish exporters to plan and co-ordinate their production activities in relation to market requirements, the Board, through the facilities of the Marketing Services Branch of the Fisheries and Marine Service, provides a market outlook service to meet the increasing needs of the industry in terms of market information and to expand and increase the frequency of these market outlook reports. The objective is to provide the industry at the beginning of the fishing season with a short-term supply and demand outlook of the US market for fillets and blocks of the major groundfish species, followed by periodic situation reports. The supply outlook covers the major producers of groundfish such as Canada, Iceland, Norway, Denmark and Greenland.

Canadian Saltfish Corporation. The Canadian Saltfish Corporation was established under the Saltfish Act and became operative on May 4, 1970. Its main purpose is to improve the earnings of fishermen and of other primary producers of salt cured fish. It does this through the production or purchase, processing and marketing of salt cod from participating provinces.

The Corporation, whose head office is at St. John's Nfld., consists of a board of directors composed of a chairman, whose office is in Ottawa, a president who is general manager, one director for each participating province and not more than five other directors, all of whom are appointed by the Governor in Council. It is assisted by an Advisory Committee of 15 members, also appointed by the Governor in Council, at least half of whom are fishermen or representatives of fishermen. The limit of the Corporation's financial obligations is \$10 million and the Corporation is required to operate without grant appropriation from Parliament. It is empowered to distribute excess of income over expenses to participating fishermen and other primary producers.

In 1972, the participating provinces were Newfoundland, and Quebec in respect of the lower north shore of the St. Lawrence River. The results of the 1970 and 1971 seasons permitted the Corporation to make additional payments of approximately \$500,000 for each of these two years.

The Freshwater Fish Marketing Corporation. This Corporation was established in 1969 for the purpose of marketing and trading in fish, fish products and fish by-products in and out of Canada to ensure more orderly marketing for the benefit of the whole fishery and to achieve higher and more stable prices for the catch.

10.2.2 Provincial government activities

Newfoundland. The provincial Department of Fisheries, in conjunction with the Newfoundland Fisheries Development Authority, a Crown corporation established in 1953, is concerned mainly with improvement and development of fishing and production methods. It conducts experiments and demonstrations in new designs of fishing gear as well as the modification of existing types, the construction of multi-purpose fishing craft and the exploration of potential fishing grounds with a view to increasing catching efficiency.

Loans are made to processors for the establishment and expansion of fish processing plants and for deepsea draggers. Aid to fishermen for the construction of modern vessels capable of a greater variety of fishing operations and larger production is provided by loans from the Newfoundland Fisheries Loan Board. The Fishing and Coasting Vessels Rebuilding and Repairs (Bounties) Act, 1958 authorizes financial assistance in maintaining and prolonging the life of the existing fleet. The Coasting Vessels (Bounties) Act, 1959 authorizes the granting, for locally built ships, of a maximum bounty of \$150 per ton for vessels of between 100 and 400 gross tons. The Fishing Ships (Bounties) Act, 1970 authorizes the payment of a bounty of \$200 per registered gross tonnage on boats 10 tons under deck up to 150 tons which are built under permit. An Inshore Fisheries Assistance Programme provides a bounty of \$10 per foot on boats measuring from 20 to 30 ft and \$12.50 per foot on boats measuring 31 to 35 ft. Bounties are also paid to fishermen on certain types of synthetic fibre fishing nets and lines.

Other services include advising fishermen on gear and equipment, industrial research, plant construction and engineering, and assistance to fishermen's unions. The Fisheries Salt Act, 1957 and the Fishing Salt Regulations, 1969 authorize rigid control over the sale and distribution of fisheries salt.

The inland waters of Newfoundland, although they provide excellent sport fishing, are not commercially exploited. The lakes and ponds actually remain under the authority of the Department of Tourism but, under federal-provincial agreement, these waters, including rivers and streams, are under federal control in matters of conservation and guardianship.

Prince Edward Island. The sea and inland fisheries of Prince Edward Island are administered by the Fisheries Service of the federal Department of the Environment. The provincial Department of Fisheries supplements federal activity in this area and is concerned principally with quantifying and, within the terms of the provincial role in fisheries management, maximizing returns, both social and economic, to those engaged in the fisheries industry. The Department provides technical assistance and, in conjunction with the federal fisheries organizations, engages in experimental and developmental work in such fields as fishing methods, resource inventories, statistical studies and management assistance.

Loans are made available to fishermen and the fishing industry through the Prince Edward Island Lending Authority, a Crown corporation established in 1969 which is empowered to grant credit in the sectors of fisheries, industry, tourism and agriculture. The provincial responsibilities in the area of freshwater fisheries are discharged by the Fish and Wildlife Division of the Department of Tourist Development.

Nova Scotia. Although the federal government has exclusive jurisdiction over the marine and inland fisheries of Nova Scotia and attends to all phases of their administration, the Nova Scotia government operates in several fields where provincial initiative is found to be necessary and appropriate due to the importance of the fishery resources in terms of employment, industry, trade and recreation.

The Nova Scotia Department of Fisheries concentrates most of its efforts on training fishermen and on resource development. It operates a Fisheries Training Centre in Pictou providing year-round facilities for all commercial fishermen and it conducts a program of short courses for in-shore fishermen in selected fishing communities throughout the province. The principal subjects of instruction are engines, navigation and nets and gear. The Resource Development Division organizes and conducts explorations of fishing grounds for new resources and studies and introduces new, improved gear and methods to the industry. Recently, work has been carried out on "off-bottom" methods of rearing oysters and mussels. An oyster hatchery went into production in 1971 which will facilitate studies and rearing trials with other shellfish species.

Loans are made available to fishermen and to the fishing and fish processing industries

through the Nova Scotia Resources Development Board, a branch of the Nova Scotia Department of Development.

In recent years, Nova Scotia, through the Wildlife Conservation Division of its Department of Lands and Forests, has spent a considerable amount of money on management and investigation in certain lakes and streams in the province with a view to improving the freshwater sport fishery. A continuing program of lake and stream investigations was begun in 1961 to obtain information useful in formulating a fish management program. A system of rearing ponds, capable of producing 100,000 yearling speckled trout annually, has been established on the Moser River in Halifax County. Several projects dealing with reclamation, rainbow trout and smallmouth bass are also being conducted. A fisheries biologist is employed full-time by the Division.

The Nova Scotia Department of Tourism has been actively promoting saltwater sport fishing. In conjunction with the provincial Department of Fisheries and the federal Department of Manpower and Immigration, it arranges courses for captains contemplating the establishment of charter services, awards prizes to sportsmen with the largest tuna and bass catches of the season, sponsors the International Tuna Cup Match and the Intercollegiate Game Fish Seminar and Match, and publishes a brochure listing charter boats available in the province.

New Brunswick. Commercial fishing is one of the most important basic industries of New Brunswick, employing about 6,200 fishermen with annual earnings of \$17 million and 3,000 plant workers. The annual marketed value of fish products is about \$67 million of which 90% is exported to the United States. New Brunswick's commercial fisheries, both tidal and inland, are under the legislative jurisdiction of the federal Department of the Environment; angling in Crown waters is the responsibility of the provincial Department of Natural Resources.

The New Brunswick Department of Fisheries and Environment has five Branches. The General Administration Branch is responsible for the planning, organization and control of all general administrative services of the Department, including program formation, financial administration, personnel management and public relations. Close liaison is maintained with other federal and provincial departments and agencies concerned with the fishing industry of the province.

The Boatbuilding and Maintenance Branch, employing marine engineers, a naval architect and boat inspectors, studies, modifies and approves plans and specifications of the many types and classes of fishing vessels employed in the provincial fisheries and inspects vessels financed by the Fishermen's Loan Board. New designs are encouraging the trend toward larger combination multipurpose vessels. Under the experienced leadership of the Branch, New Brunswick fishermen are now operating a fleet geared for diversified operation, permitting inexpensive and easy conversion from one fishery operation to other more lucrative occupations throughout the season. A 600-ton-capacity marine railway dry dock constructed in 1968 at Bas Caraquet serves the off-shore fishing fleet of northeast New Brunswick, and a 200-ton transfer system adjacent to the dry dock provides winter lay-up and repair facilities for smaller vessels. Nearby shipbuilding and repair facilities provide ready and adequate service to an expanding off-shore fleet.

The Exploratory Fishing and Education Branch continues the experimental programs carried on for many years in co-operation with the federal Department of the Environment. Technical and financial assistance are made available to the New Brunswick Department of Fisheries and Environment for projects undertaken toward modernizing fishing and processing methods, experimenting with new types of fish-catching equipment and demonstrating its operation to fishermen, and exploring and developing hitherto unexploited or under-exploited species of molluscs, crustaceans, fishes and seaweeds. This work has resulted in the establishment of snow crab, shrimp, Irish moss, tuna and eel fisheries in New Brunswick.

During 1972-73, several development projects were undertaken on a shared-cost basis with the federal Department of the Environment including a technological development program for dulce cultivation on Grand Manan Island; a survey of Irish moss concentrations at the entrance to the Chaleur Bay (west of Miscou Island, north of Caraquet Island and north of Blue Cove); a study of the snow crab and rock crab industries in New Brunswick; development of a prototype system of refrigeration for shrimp vessels, shrimp exploration in the Bay of

Fundy, and a study of the shrimp industry in northeastern New Brunswick; a study of mollusc harvesting methods, a feasibility study for a mollusc processing plant in northeastern New Brunswick and exploration for ocean quahaugs with a hydraulic dredge in Northumberland Strait; oyster culture and rearing experiments in Baie de Buctouche, Northumberland Strait and Ruisseau Bar pond, Chaleur Bay; sardine exploration in the Gulf of St. Lawrence; capelin exploration with a New Brunswick-based vessel on the Grand Banks of Newfoundland; introduction of mackerel purse-seining on in-shore vessels in the Cape Bald region of Northumberland Strait; tuna exploration in oceanic waters off the Gulf of Maine; and installation of bait-freezing facilities on Campobello Island.

The Branch operates a School of Fisheries at Caraquet, in northeastern New Brunswick where, in the 1971-72 academic year 500 fishermen took training in the various phases of their trade. The School teaches navigation, administration, marine biology, oceanography, radiotelephone, metal and woodworking, arithmetic and languages. In 1972, 44 graduates received practical training aboard large modern fishing vessels under a joint federal-provincial program of technical upgrading. Following a few weeks of training, many of the apprentices are taken on as regular crew members.

The Fish Inspection and Marketing Branch administers the New Brunswick Fish Inspection Act and Regulations although, for greater effectiveness and to avoid duplication of personnel, they are applied by 30 fish inspectors of the Fisheries Service of the federal Department of the Environment Maritimes Area. The Branch actively promotes the expansion and modernization of existing fish processing plants and the establishment of new plants in the province. Its efforts include studying existing markets and developing new ones for fishery products at home and abroad in collaboration with other government agencies, federal and provincial. Emphasis is placed on promoting the consumption of fishery products within the province, on the development of new products for domestic and export markets, and on the training of plant personnel in management and production controls.

The Fishermen's Loan Board of New Brunswick, a body corporate operating under the jurisdiction of the Minister of Fisheries and Environment, was established in 1946 and now operates under the Fishermen's Loan Board Act of 1952 and the regulations of November 1, 1963. Its function is to improve and develop the fishing industry of the province by providing adequate financial assistance at moderate rates of interest to individual fishermen, groups, associations, processing firms and corporations; to construct modern fishing vessels; and to make major repairs and purchase engines and equipment. Since its inception, the Board has granted 2,440 loans to New Brunswick fishermen for a total of over \$34.6 million; outstanding loans amounted to \$14.6 million in 1971.

Loans are repayable within a five-year period on small in-shore fishing vessels; repayment schedules on large trawlers may extend to 15 years, based on the gross proceeds of the catch. Most of the new fishing vessels being built for fishermen and fish processing firms in the province are financed by the Board. The Board acts as agent for the federal Department of the Environment's financial assistance program which makes funds available to owners of new fishing vessels not eligible for the shipbuilding subsidy granted by the Department of Industry, Trade and Commerce.

Sport fishing contributes substantially to the economy of the province. Great Atlantic salmon rivers like the Miramichi, the Restigouche and the Saint John are known around the world for their prolific production of this majestic game fish and attract many thousands of tourists to the province each year. Anglers catch as many as 50,000 salmon a year in the Miramichi system alone. Many other species are also sought after by both residents and non-residents in the hundreds of streams, rivers and lakes of the province.

Quebec. The sea fisheries of Quebec are administered by the Fisheries Branch of the Quebec Department of Industry and Commerce. The Branch comprises three Divisions — Research, Economics, and Technical Services.

The Research Division carries out experiments and studies on the biological aspects of commercial fish species, the processing of seafood for marketing and the testing of new types of fishing gear. The Biology Service uses research facilities at Grande-Rivière and particularly those of the Quebec government science complex at Ste. Foy in suburban Quebec.

One of the main functions of the Economics Division is to administer the loan program covering the construction and repair of boats and the purchase of various types of fishing gear.

In 1972, the active off-shore fishing fleet consisted of 21 steel trawlers, including two 125-foot midwater trawlers, two 127-foot trawlers, one 100-foot seiner, four 89-foot trawler-seiners and twelve 82-foot trawlers. There were also 62 wooden trawlers ranging from 60 to 87 feet in length and 58 vessels of various descriptions. As at March 31, 1972 the owners of these vessels held outstanding government loans totalling nearly \$9 million, \$400,000 less than the year before. The Economics Division conducts regular inspections of fishing vessels, keeps maintenance and repair crews under close supervision and checks the tenders submitted to fishermen by shipyards. The Division also carries out the socio-economic analyses required to plan government measures and ensure the success of policies and programs relating to the sea fisheries. The Division includes an Engineering Service which draws up plans and specifications with a view to improving fishing gear.

The Technical Services Division has three Services; the Construction and Maintenance Service prepares plans and initiates various construction and repair projects affecting collective facilities used by the fishing industry. The Equipment Administration Service is in charge of the facilities provided by the Fisheries Branch. These include 28 cold storage warehouses with a daily freezing capacity of 500 tons and a storage capacity of 25 million lb., three winter harbours, fish-collecting stations, etc. The Protection Service issues fishing permits, conducts land and sea patrols and investigates breaches of regulations.

The Fisheries Branch has its head office in Quebec City and branch offices in the main fishing centres. In conjunction with the Department of Education, it conducts a training program for fishermen, technicians and factory workers. To this end, it maintains a fisheries school and a training vessel brought into service in June 1968. The Fisheries Branch co-operates closely with the Quebec Planning and Development Board and the Eastern Quebec Regional Administrative Conference in implementing the different development programs.

Sport fishing in the inland waters of Quebec is under the jurisdiction of the Department of Tourism, Fish and Game, which employs 531 full-time conservation officers and issues the required sport-fishing licences. Six hatcheries are maintained by the Department, where speckled trout, brown trout, rainbow trout, grey trout, ouananiche, maskinonge and salmon are reared for the restocking of lakes and streams.

Excellent fishing may be found in all provincial parks and reserves. Gaspé and Laurentide Parks are renowned for trout fishing, and the waters of Chibougamau Reserve and La Vérendrye Park, situated on the height of land, abound in pickerel, pike and grey trout. Eleven salmon rivers are open to anglers — the Petit Saguenay, the Laval, the Moisie, the Matane, the Cap Chat, the Ste. Anne, the St. Jean, the Matapédia, the Dartmouth, the Port Daniel and the Petite Cascapédia.

A committee made up of directors of the Quebec Wildlife Federation makes recommendations to the provincial government concerning legislation required for the maintenance of satisfactory fishing conditions and other problems arising out of the ever-changing conditions of modern life and their effect on the wildlife of the province.

Ontario. The fishery resources of Ontario are administered by the Commercial Fish and Fur Branch and the Sport Fisheries Branch of the Ministry of Natural Resources, under the authority of the Federal Fisheries Act, the Ontario Fishery Regulations, the Ontario Game and Fish Act and the regulations connected therewith.

The commercial fishing industry in Ontario, with a capital value of over \$12 million, produces an annual yield of from 53 million lb. to 72 million lb. of fish including nearly ten million lb. of bait fish. Fishermen received \$10 million from the sale of this catch. It is estimated that subsequent handling, processing and servicing of fish will result in a contribution of about \$20 million to the provincial economy. The industry, although widely scattered throughout the province, is centred chiefly on the Great Lakes, particularly Lake Erie. Employment is provided by the industry for about 1,900 commercial food-fish fishermen and 2,500 bait-fish fishermen directly and for many more indirectly.

The species harvested commercially include yellow perch, smelt, whitefish, pickerel, pike, lake trout, herring, chub, carp, white perch, sturgeon, white bass, bullhead, catfish, eel, goldeye, sunfish, burbot, freshwater drum, rock bass, crappie, sauger and suckers. Nearly 90% of all fish landed in Ontario are harvested from the Great Lakes. More than 500 smaller inland lakes are commercially fished, mainly those in the northwestern portion of the province. Careful management of these lakes is essential to ensure continued production.

The types of fishing boats in use vary from small craft to 70-foot tugs, and the types of gear vary from gill-nets, pound-nets and trap-nets, seines, trawls and baited hooks to small hand-operated seines and dip-nets. Fishing methods and equipment have been modernized extensively during the past few years. Diesel-driven steelhull tugs with depth sounding devices, radar and ship-to-ship and ship-to-shore communications have been in use for some time. Knowledge of the fish and their movements is constantly being expanded from biological research findings. Modern icing facilities and transportation methods are in use as well as new types of fishing gear. Programs to develop more efficient and economical fishing and processing techniques have resulted in efficient bulk-handling techniques for smelt and a viable fish meal plant which produces a marketable product from fish-processing wastes and fish unsuitable for food. Trawling has proved very efficient in harvesting smelt on a year-round basis on Lake Erie.

Most Ontario fishermen are organized into various local associations and many of these associations are in turn represented by the Ontario Council of Commercial Fisheries which performs important services to the industry.

Ontario is one of the most attractive fishing areas on the continent, having an estimated freshwater area of approximately 68,490 sq miles. Excellent angling opportunities are available for such prized fish as brook, rainbow and lake trout, yellow pickerel (walleye), smallmouth and largemouth bass, northern pike and maskinonge. The recreational angling fraternity is no longer restricted to open water — fishing is now a year-round sport. In many stores and camps throughout the province, a wide selection of ice-angling equipment, including snowmobile rentals, is available to the fisherman and seasons have been extended in many parts of the province for certain species of fish to facilitate winter angling. Annual revenue from the sale of angling licences prior to 1971 was in the neighbourhood of \$6 million. As of the 1971 summer season, licences are no longer required of residents but an annual fee of \$8.50 is payable by non-residents for fishing privileges. The management of this valuable resource is administered by a field staff of well-trained conservation officers and biologists.

Ontario operates 16 fish hatcheries and rearing stations; the main species reared include brook, rainbow and lake trout, splake, smallmouth and largemouth bass and maskinonge. The basic aim of the hatcheries is the economic production of high-quality species to sustain and develop recreational fishing throughout the province. Studies are conducted on the improvement of transportation and planting techniques to improve survival and returns to the angler; such transportation includes the use of aircraft, helicopters and trucks. The marking of hatchery fish by removal of a single fin is providing valuable information on survival of fish stocks and angler success.

A significant research program contributes to the understanding of principles operating in the aquatic ecosystems. Programs are directed toward specific fisheries management problems in the Great Lakes and in the smaller inland waters.

Manitoba. Manitoba's interior location belies the importance of its fisheries resources which stems from an abundance of fresh water in about 40,000 sq miles of lakes and streams covering 16% of the area of the province.

In the year ended March 31, 1972, the commercial fishery produced 12.8 million lb. of fish, a 9% decrease from the 14.1 million lb. of the previous year. The value to the fishermen increased \$268,800 to \$2.4 million. Northern waters contributed 5.6 million lb. (43%), followed by Lake Winnipegosis with 3.1 million lb. (24%) and Lake Manitoba with 1.8 million lb. (13%). The production from Lake Winnipeg was 1.5 million lb. (11%), an increase of 1.1 million lb. as a result of the lake reopening after the closure for mercury pollution. Sixteen species or groups of species normally enter into the commercial catch but only a few species predominate. In 1971-72, whitefish contributed 4.6 million lb., pike 2 million lb. and walleye (pickerel) 2 million lb. A miscellany of species, primarily suckers and carp, contributed 4,205 lb. All of the commercial catch is marketed by the Freshwater Fish Marketing Corporation, a federal Crown agency, and is exported mainly to the United States. Gill-nets are the main fishing gear. About 966 fishermen were employed during the open-water fishing and 1,575 took part in winter fishing.

Fisheries administration is under the control of the Department of Mines, Resources and Environmental Management and is divided into research, program development and field operations sectors. Field operations are divided among four regional units. Conservation

officers enforce both the commercial and the angling regulations and carry out numerous other duties in connection with fisheries management. Professional biologists carry out a continuing program of studies which not only monitor the resource but also extend the knowledge of it. Fish culture plays an important role in fisheries management. Pickerel hatcheries are located on Lakes Winnipegosis and Manitoba. Lake Winnipeg has two hatcheries, one at Dauphin River and the other at Grand Rapids. A trout hatchery is located in the Whiteshell Provincial Park. Two temporary facilities for collection of spawn are also used.

The sport fishery is an important use of the fishery resource, with walleye, pike, perch and several kinds of trout being the principal sport species. A total of 138,327 angling licences were sold in 1971-72 of which 108,331 were purchased by Canadian residents.

Saskatchewan. The Fisheries and Wildlife Branch of the Department of Natural Resources is responsible for administration of the fisheries resources of Saskatchewan. The Fisheries Section, with head office in Prince Albert, is charged with planning and developing policies and programs to ensure proper management and utilization of the fisheries and administration of both the federal and provincial Fisheries Acts and Regulations. The over-all objective is to encourage efficient multi-use of the fishery, taking into consideration the interests of the various groups wishing to use the resource.

During 1971, 2,098 fishermen obtained commercial fishing licences to fish 231 lakes. The resulting harvest of 12.5 million lb. was worth \$1.8 million to the fishermen. The industry, although widely scattered, is centred chiefly in the northern half of the province; approximately 65% of the production came from northern waters. In order of market value, the species composition of the catch was whitefish, walleye, lake trout, pike and tullibee.

Four shallow saline lakes in southern Saskatchewan produced 65,000 lb. of brine shrimp and brine shrimp eggs. These are processed for sale to fish hobbyists. An estimated one million lb. of rough fish were utilized by nine mink ranches; another 800,000 lb. were shipped to Manitoba for mink ranch use. Interest continues to grow in fish farming. In 1971, 482 fish farming enterprises were licensed to raise rainbow trout. The majority of operations, however, were intended for the private use of the owner. In spite of an estimated 80,000 lb. harvest, this form of aqua-culture is still in the experimental stages in the prairie region.

In 1971, 139,362 angling licences were sold. Northern pike, walleye, lake trout, perch, arctic grayling, rainbow trout and goldeye continue to be the principal species taken. A continuous program of inventory of sport fishing stocks is maintained to provide up-to-date information for management purposes. During 1971, 217 waters were examined. Expansion of the exotic species program continued with varying combinations of brook, rainbow, and splake trout released in 13 new waters throughout the province in 1971. More than 100 lakes and streams have been stocked with trout and salmon to date.

The provincial hatchery at Fort Qu'Appelle reared 21.4 million fish of nine species for distribution in 140 waters. Brook trout and walleye were the species most widely distributed, being stocked in 40 and 39 waters, respectively. Rainbow trout were stocked in 35 waters.

The limnological and fisheries research program is designed to provide basic information on the productivity of water bodies, to secure information on the abundance and relationship of fish species and to investigate and assess factors affecting fish populations. This information is subsequently used to develop fishery management policies and programs.

Alberta. Commercial and sport fishing are administered by the Fish and Wildlife Division of the Department of Lands and Forests, under the authority of the Fisheries Act (Canada) and the Fish Marketing Act (Alberta).

Production of commercial fish from Alberta's 6,485 sq miles of fresh water for the fiscal year ended March 31, 1972 was 5.3 million lb. a decrease from that of the previous year. The landed value of the catch was \$729,931 compared to \$826,268 in 1970-71 and the market value \$1.4 million compared to \$1.6 million.

Lake whitefish is the most valuable commercially caught fish and accounted for 66% of the total value but represented only 40% of the total landings. Pike rose to second place in market value. Tullibee, used primarily for animal food, dropped to third place and other species taken in order of market value were walleye, perch, ling, suckers, lake trout and goldeye.

A major part of the quantity of fish taken is marketed outside the province, mainly in the United States, by the Freshwater Fish Marketing Corporation.

There were 159,484 angling licences sold in Alberta in 1970-71 of which 156,575 were to residents and non-resident Canadians and 2,909 to non-resident non-Canadians. There were 404 Trophy Lake licences and 417 spear fishing licences sold during the same time period.

In 1972, a total of 185 lakes were stocked with nearly 5.2 million fish and fish eggs: 63% rainbow trout, 19% eyed walleye eggs, 7% eastern brook trout, 5% walleye fry, 3% kokanee, 2% coho salmon and the remainder in brown and cutthroat trout.

There were 354 private and 28 commercial game fish farm licences issued in 1972 and these operations handled 450,000 rainbow trout.

Fisheries in Alberta are administered on a regional basis, with six fisheries biologists located in various centres of the province and responsible for a specific geographical area. In addition to the regional staff there is a Research Group located in Edmonton consisting of two biologists and a technician, and an Aquatic Habitat Protection Group also located in Edmonton and consisting of one biologist and one technician.

British Columbia. A Fisheries Office, which was organized in 1901-02 and became very active in fish culture work, building and operating fish hatcheries and instituting scientific research into various fishery problems, was superseded in 1947 by the Department of Fisheries. This was replaced in 1957 by the Department of Recreation and Conservation, with the Commercial Fisheries Branch now being the provincial organization concerned with commercial fisheries. The administrative and regulative jurisdiction over the fisheries of British Columbia rests with the federal authority; the ownership of the fisheries in the non-tidal waters is vested in the Crown in the right of the province, as are the shell fisheries such as oyster fishing and clam fishing in tidal waters. The province administers these fisheries although the regulations covering them are made under federal Order in Council on the advice and recommendation of the province.

The provincial Fisheries Act provides for the taxation of the fisheries and, under civil and property rights, for the regulation and control of the various fish processing plants under a system of licensing. The commercial harvesting of oysters and marine aquatic plants is regulated by provincial permits and licences. Provision is also made for arbitration of disputes regarding fish prices that may arise between the fishermen and operators of the various licensed plants. The administration of the Act involves the collection of revenue and the supervision of plant operations.

Regulation and administration of net fishing in the non-tidal waters of the province, including commercial fishing and authority for regulation of the game fisheries in non-tidal waters, is vested in the Fish and Wildlife Branch which operates a number of trout hatcheries and egg-taking stations for restocking purposes.

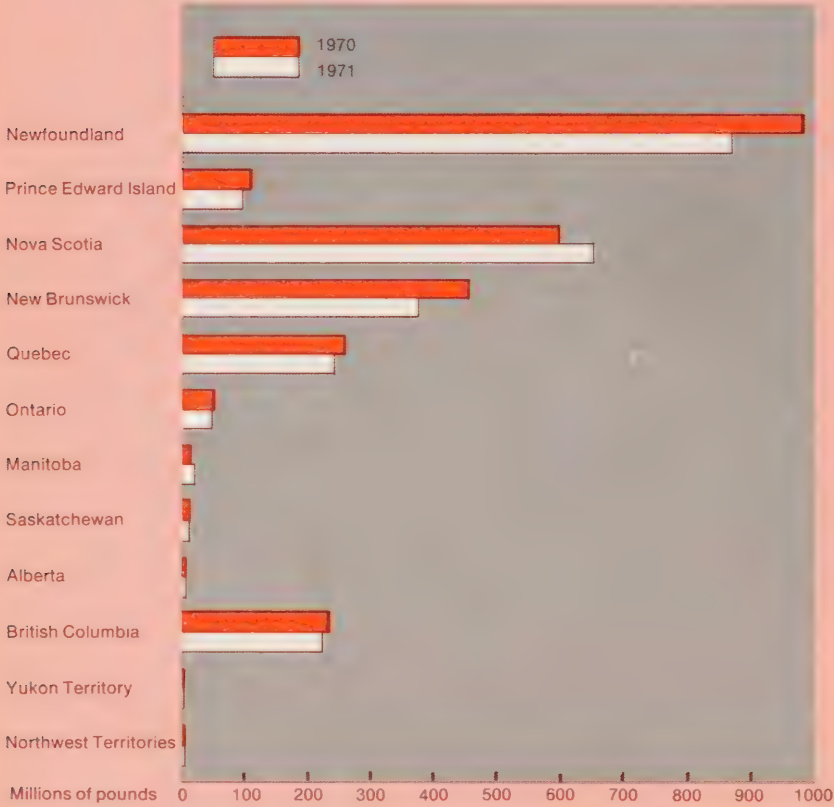
The Branch co-operates closely with the Fisheries Research Board of Canada. The biological research into those species of shellfish over which the province has control, principally oysters and clams as well as marine plants, is conducted by the Fisheries Research Board of Canada at the Pacific Biological Station, Nanaimo, BC, under agreement with the federal and provincial authorities. The object of this research is to encourage the industry to produce better products more economically and to enable the Commercial Fisheries Branch to regulate the various species so that maximum exploitation may be obtained on a sustained-yield basis.

10.2.3 Statistics of the fishing industry

Commercial fishing in Canada provides employment for some 59,000 persons on a full-time or seasonal basis and contributes approximately \$462 million annually to the nation's economy (Tables 10.13, 10.14). Of main concern to the industry at the present time is the trend toward over-exploitation of certain species, resulting from the rapid expansion and intensification of fishing effort by domestic and foreign fleets over the past few years. The federal government is taking initiatives at the national and international levels to achieve rational management and conservation policies to safeguard fish stocks for future generations.

On the Atlantic Coast, Canada's commercial fisheries concentrate on stocks of cod, redfish, haddock, small flatfishes and herring, as well as valuable shellfish resources, notably lobsters, oysters and scallops. Pacific Coast fisheries are based principally on salmon and halibut; herring stocks, once plentiful, are recovering from a sharp decline in the late 1960s which necessitated closure of the fishery except for catches used for human consumption. The large freshwater lakes of Canada's interior produce important supplies of whitefish, perch, pickerel, trout and pike.

Landings of fish



10.2.3.1 Fish landings

Canadian landings of fish and shellfish in 1971 amounted to 2,548 million lb., 6% less than 1970 and 12% less than the peak year of 1968. Smaller catches were landed on both the Atlantic and Pacific Coasts, 7% less on the Atlantic Coast and 4% less on the Pacific Coast. The total value to Canadian fishermen at \$201 million was, however, about 1% higher than in 1970 (Table 10.15).

Atlantic Coast. On the Atlantic Coast, total landings have been declining since the peak in 1968. In 1971, they amounted to 2,225 million lb., a decline of 7% compared with 1970 and of 12% compared with 1968. The value to Atlantic Coast fishermen, however, has been increasing steadily and reached an all-time high of \$129 million in 1971 (Table 10.16).

Landings of Atlantic groundfish, taken as a whole, have been rather stable at just over 1,100 million lb. during the last seven years. Two main species of this group, cod and haddock, have been declining in volume, while redfish has been increasing. Cod and haddock landings totalled 575 and 93 million lb., respectively, in 1965; corresponding figures for 1971 were 449 and 54 million lb. On the other hand, redfish landings increased from 130 million lb. in 1965 to 249 million lb. in 1971.

Herring landings were below 1,000 million lb. for the first time since 1968. The large expansion which took place in this fishery in the mid-sixties culminated in landings of 1,200 million lb. in 1968; since that year, however, landings have declined gradually. Gross earnings

to fishermen from this fishery in 1971 were \$13.2 million, a very slight decline from the previous year.

Lobster landings at 38 million lb. were slightly higher than those of 1970 and above the five-year average for the period 1966-70. Prices to fishermen were generally higher than in 1970 and, as a result of the combination of higher prices and larger volume, gross earnings to fishermen reached an all-time high of \$33.2 million.

The downward trend in scallop landings which has been evident in recent years continued in 1971: landings totalled 11.2 million lb., 14% less than in the previous year. Higher prices to fishermen were not sufficient to maintain the value to fishermen which declined by 8%.

On a provincial basis, both quantities landed and values to fishermen were lower than in 1970 in New Brunswick, Prince Edward Island and Quebec. In Newfoundland, landings were down but values to fishermen marginally higher. In Nova Scotia, fish landings and gross earnings to fishermen were both higher.

Pacific Coast. On the Pacific Coast, landings of fish and shellfish in 1971 amounted to 228.8 million lb., valued to fishermen at \$58.6 million, a decline of 4% in quantity and of almost 3% in value compared with the previous year (Table 10.16).

Salmon runs were better than expected and British Columbia salmon fishermen enjoyed a good average year. Salmon landings are reported at 132 million lb., valued to fishermen at \$44.5 million. Corresponding figures for the five-year average 1966-70 are 141 million lb. and \$38.5 million.

Halibut was scarce on the main grounds fished by the Canadian fleet and landings at 25.3 million lb. were 14% below those of 1970, the lowest level since 1955. Prices to fishermen were, on the average, slightly lower than in 1970 and gross earnings to fishermen were \$8.1 million.

The ban on herring fishing for reduction purposes remained in effect during the year but fishing for food purposes was allowed and more than 22 million lb. were caught.

Inland fisheries landings reached 95 million lb. in 1971 at a value of \$13.4 million, an increase for both of about 4%.

10.2.3.2 Fish marketing

The total value of Canada's fishery products in 1971 reached an all-time high of \$462 million, up \$35 million from the record level set in 1970 (Table 10.17). Groundfish (Atlantic Coast) recorded the largest increase rising about 24% in value over 1970, while pelagic and estuarial, and molluscs and crustaceans showed smaller increases of 6% and 9%, respectively.

The market value of Pacific Coast fisheries products showed an over-all decline of about \$3 million compared with 1970. Groundfish contributed about \$2.2 million to the drop while the other major sub-grouping totals remained relatively constant. However, salmon, a component part of the total for pelagic and estuarial declined \$2.7 million to record the largest 1971 Pacific Coast drop for a species. Herring products more than tripled to offset the salmon decline, resulting in a constant level for this group.

The pack of Pacific canned salmon in 1971 was 1.4 million cases (48 lb.), fractionally lower than both the 1970 pack and the 1966-70 average annual pack (Table 10.18). The production of canned sockeye and coho was larger than the five-year average, while that of pink and chum was lower.

The total value of all Atlantic Coast freezings recorded a marked increase of 27.5% which exceeded the 7.0% rise in the poundage frozen (Table 10.19). The effect on prices was particularly noticeable in the instance of cod, the unit price of which jumped 50% to 42 cents per lb. at the same time cod contributed about 57% to the total Atlantic Coast increase. Other species showed a similar trend but at a very moderate rate; the over-all average price increase for the Atlantic Coast was six cents per lb.

10.3 The fur industry

A number of Canada's resource-based industries trace their origins back to the early days of settlement, but the fur trade seems to have been the least affected by technological progress. The production of wild furs is still almost the exclusive province of an individual tending a trapline in much the same way as did his forebears.

In the 1971-72 season some 40,000 trappers, operating mainly in the northern portions of the provinces in the Yukon Territory and Northwest Territories, produced 3.2 million wildlife pelts with a value of \$18 million (Table 10.20). This represented 55.5% of the total value of furs produced (\$33million) with fur farm pelts accounting for the remaining 44.5% (\$14.7 million).

In 1971-72 the value of Canadian fur production increased by 20% compared with the previous season, wildlife pelt values being 41% and farm pelts 1% higher. Ontario continues to lead the provinces and territories in fur production, accounting for 29.3% of the total value in the 1971-72 season compared with 28.4% in the previous season (Table 10.21). Increases were common to all provinces except Newfoundland and British Columbia.

Fur trapping. Ontario continued to be the most important producer of wildlife pelts, accounting in 1971-72 for 22.5% of the \$18 million of furs produced on the trapline. Other major producers were Alberta (18.3%), Manitoba (14.5%), Quebec (10.7%) and Saskatchewan (11.5%). Although the numbers of all the important Canadian fur bearers are being well maintained, the size of the annual catch is affected by a number of factors not connected with the abundance or otherwise of the respective species. The most important of these factors is the market price of raw furs. In seasons of low prices trappers will, understandably, seek other employment and the fur bearers go unharvested.

The principal kinds of wild fur pelts taken, according to value, are beaver, muskrat, lynx, seal, and fox. These five kinds accounted for 80% of the total value of wild pelts produced in 1971-72, beaver alone accounting for 35%. The number of beaver pelts produced was slightly higher than in the previous year and the average value per pelt increased from \$12.55 to \$17.18 (Table 10.20).

Both the production and the average values of all but one (seal) of the important kinds of Canadian wild furs in 1971-72 were above the 1970-71 levels continuing the trend toward firming prices which developed at the end of the 1970-71 season. This stronger market with its accent on youth-oriented styling promises to stimulate demand for both the long-haired and short-haired furs.

The role of the fur fashion designer in first rousing interest, then transforming this interest into demand at the retail level is an important one, and the results may extend right back to the trapper in the form of higher prices for his pelts. One example of the influence of the fur stylist is the recent resurgence of muskrat. For many years the coming of fall meant the appearance of the ubiquitous muskrat coat, uniformly styled and brown-dyed to resemble mink. As a result of this over-exposure, as well as in deference to the trend toward slim-line wear, the popularity of muskrat fur declined sharply in the 1950s and 1960s. However, in recent years this fur, now available in attractively styled natural and dyed coats and jackets, has made a comeback and renewed popularity has brought about higher prices for muskrat pelts.

Fur farming. Mink remains by far the most important fur bearer raised on Canadian farms, this species accounting for over 99% of the value of the fur farm production. Chinchilla and nutria are also raised on farms in this country but because of the small numbers involved the collection of statistics on nutria and chinchilla has been discontinued.

In 1935 the Canadian mink ranching industry produced 30,558 pelts with an average value of \$10.58 per pelt. At that time mink farmers were operating very much in the shadow of the larger silver fox industry. It was found, however, that mink adapted well to reproduction in captivity and pelt production increased steadily until the peak year of 1967 when the output reached 1,967,323 pelts. Mink are now raised in all provinces except Newfoundland, the principal producers in 1971 being Ontario (38.0%), British Columbia (19.1%), Quebec (10.2%), Alberta (10.2%) and Nova Scotia (9.7%).

Beginning in 1966, the industry went through a series of years when pelt prices were around or below the cost of production. This depressed market situation continued into the 1970 pelt crop year when the average pelt value was \$9.65, the lowest price since 1942. This price is substantially below the cost of production and as a result the number of mink farms has continued to decline, from 1,017 in 1969 to 675 in 1971 (Table 10.22). Pelt production suffered in keeping with this decline, amounting to 1,155,020 pelts in 1971 for a value of \$14.6 million compared with 1,778,737 pelts in 1969, valued at \$18.7 million. As in the case of the wildlife furs, the mink market strengthened in the latter part of the 1970-71 marketing season.

Although the number of mink farms declined sharply a number of the farms that ceased operations were, under the tight market situation, marginal from point of view of the quality of pelts produced, over-high production costs, or other factors. The mink farmers who are still in business are highly skilled operators who produce some of the world's finest quality mink pelts. These producers are concentrating on economy of operation, coupled with production of top quality pelts.

In 1971, 1,405 fox pelts with an average value of \$39.11 were produced on 39 Canadian farms. The principal producers were Ontario, New Brunswick and Prince Edward Island. Costs of fox farming operations have been increasing and, although fox furs are currently popular in all markets, there are no indications that this business is likely to increase in importance in the foreseeable future.

Fur marketing. The bulk of the Canadian fur crop is sold at auction through competitive bidding and, prior to 1970, fur farmers and trappers were served by eight fur auction firms located across the country. Since 1970, through amalgamation and closure, the number of auction firms has been reduced to five, with three firms handling both ranched and wild furs, and the remaining two dealing in wild furs only.

The decline in the number of marketing outlets has not been a disadvantage to Canadian fur producers. World fur buyers have a wide choice of markets and will routinely travel from Europe to Canada to attend major auctions though they are unwilling to do this for small offerings. The decline in the number of auctions has reduced the fragmentation of the Canadian fur crop and made it possible to schedule fewer but larger offerings that have been attracting buyers from many countries.

In the calendar year 1972 the value of exports of raw Canadian furs amounted to \$30.3 million (Table 10.23). The principal species exported were: mink (\$11.4 million), beaver (\$7.5 million), muskrat (\$2.5 million) and lynx (\$2.0 million). The United States, Britain, Switzerland and the Federal Republic of Germany were the principal buyers.

10.4 Wildlife

Wildlife is an important renewable natural resource. The original inhabitants of what is now Canada depended on it for food and clothing and still do in some remote areas. The coming of the Europeans brought development of the fur trade which guided the course taken in exploring and settling the land as we know it today. When the country was being opened up, a number of mammals and birds became seriously depleted or extinct. As settling progressed, wildlife habitat was reduced by cutting and burning of forests, pollution of streams, industrial and urban development, drainage of wetlands, building of dams, and other changes in the land.

Today, the arctic and alpine tundra, a major vegetational region, has begun to show serious man-made changes. The adjacent sub-arctic and sub-alpine non-commercial forests have been affected principally by increased human travel which causes more forest fires, although the great forests farther south retain much of their original character, despite exploitation. Cultivable lands, originally forest or grassland, have completely changed but they have, in some cases, become more suitable than the original wilderness for some forms of wildlife. The harvestable surplus of game and fur species across Canada is seldom fully utilized and wildlife will remain generally abundant where habitat is preserved and management enlightened.

Today, Canada is known for its varied and abundant wildlife. It maintains most, or all, of the world's stock of woodland caribou, mountain sheep, wolves, grizzly bears and wolverines. These animals exist because of the vast habitat and because of the efforts that have been made to preserve them.

In 1885, the Rocky Mountain Park (now Banff National Park) was established in Alberta, preserving an area of over 2,500 sq miles in its natural state; in 1887, the continent's first bird sanctuary was established at Last Mountain Lake in Saskatchewan; in 1893 when wood bison faced extinction, laws were passed to protect them; and in 1907, a nucleus herd of plains bison was established at Wainwright in Alberta. These were among the early attempts at wildlife conservation in Canada.

For a long time, certain species were protected from man and predator. Now, having a better understanding of how nature works, it is recognized that many factors combined cause fluctuations in wildlife numbers, and hunting seasons and bag limits are based to a greater extent on environment. Given a fully stocked environment, the annual increase need only replace the losses. Surplus production can therefore be safely taken by predatory animals or, in the case of game species, by man.

As a natural resource, wildlife within each province comes under the jurisdiction of the provincial government. However, the federal government does have responsibility for wildlife on federal land and for research and management of migratory birds.

10.4.1 The Canadian Wildlife Service

The Canadian Wildlife Service (CWS) began as an agency to administer the Migratory Birds Convention Act passed in 1917. It was expanded in 1947 to meet the need for scientific research in wildlife management and is now a branch of the Department of the Environment.

The CWS conducts scientific research into wildlife problems in the Northwest Territories, the Yukon Territory and the national parks. It advises agencies concerned with wildlife management and co-operates in carrying out recommendations; it advises on and co-ordinates administration of the Game Export Act in the provinces; and it co-operates with agencies in Canada and abroad in dealing with national and international problems related to wildlife resources. As administrator of the Migratory Birds Convention Act, the CWS is responsible for recommending the annual revision of the Migratory Birds Regulations which govern open seasons, bag limits and hunting practices. This it does in consultation with provincial wildlife agencies. Enforcement of the Act and Regulations is carried out by the Royal Canadian Mounted Police, with CWS and provincial co-operation.

The loss of wetlands to drainage and filling for agricultural and other purposes poses a serious threat to waterfowl and, to counteract this, the CWS co-operated with provincial agencies in a major program, started in 1967, to preserve wetlands by purchase and long-term lease. By 1972, 45,000 acres had been bought for \$4 million and 69,000 acres had been leased for \$318,000. The CWS also has charge of 79 bird sanctuaries covering 43,000 sq miles.

The CWS conducts two annual surveys of waterfowl hunters, selected from the 420,000 holders of the Canada migratory game bird hunting permits, to obtain estimates of the species and age of the major waterfowl species taken by hunters. Other continuing projects related to migratory game birds include an annual survey of crop damage in the Prairie Provinces annual surveys of waterfowl populations and habitat conditions in western Canada, a program to reduce hazards caused by birds flying near airports, and a search for a substitute for lead shot which each year causes lead poisoning and subsequent death of a large number of waterfowl. Bird-banding provides valuable information on the migration and the biology of birds, and is especially useful in waterfowl management. The CWS headquarters in Ottawa keeps sets of continental banding records and controls the activities of banders operating in Canada. Much attention has been given to species greatly reduced in number or in danger of extinction. By 1971, 21 eggs were taken from whooping crane breeding grounds and delivered for incubation to the Patuxent Wildlife Research Center in Maryland. Eventually, the progeny from these 21 chicks will be released into the wild but only after a sufficiently large supply of breeding birds has been developed. In 1972, 16 nesting pairs (a record number) laid 29 eggs, but only five chicks reached the wintering grounds. In addition, ten adults disappeared. The causes of these losses are as yet unknown. The total population by December 1972 was 51, a net loss of five from December 1971.

Research was undertaken into the distribution of toxic chemical residues and into the distribution and size of colonies of fish-eating birds in the Great Lakes. The information obtained will enable biologists to assess the extent of factors affecting breeding success and the extent of population changes from the past and to be expected in the future.

Studies continued into the health status and parasites of game and fur-bearing animals and rodents in northern Canada, and into parasites of avian hosts. Measures to control anthrax among bison in Wood Buffalo National Park and in the Northwest Territories were successful; no outbreaks occurred in 1972.

The interpretation program, begun in 1970 with opening of the Wye Marsh Wildlife Centre at Midland, Ont., progressed in 1972 with the construction of centres at Cap Tourmente and Percé in Quebec. The former will focus on the migrant greater snow goose population; the latter will interpret the natural and human history of the Atlantic gulf coast, with special attention to Percé and the nearby sea-bird colonies of Bonaventure Island. Both centres will be in operation in 1973.

The CWS has been participating in the Canada Land Inventory which is a federal-provincial program to gather information on how land in the settled parts of Canada is being used, and how best it could be used for agriculture, forestry, recreation and wildlife.

Research in limnology includes inventory and productivity of lakes and rivers in the national parks and the biology of fish and associated flora and fauna. Adequate stocks of fish are maintained through modern methods of management, where they can be applied without detriment to the values of the areas concerned.

10.4.2 Provincial wildlife management

Newfoundland. The functions of the Newfoundland Wildlife Service are: to maintain all indigenous species from extinction; to provide other species where suitable unused habitat exists, always bearing in mind the real and aesthetic values of wildlife that are important to man; to maintain all species in the greatest number possible, consistent with the habitat needs of the species, without serious conflict with the other resource needs; and, to provide and regulate the harvest surplus of wildlife populations for the use of the people.

The Wildlife Service manages big game almost solely through the manipulation of hunting regulations based on population data gathered from field studies and hunter questionnaires, as well as the transplant of caribou and moose to unoccupied range and the predator controls of lynx around caribou calving grounds. Black bear, the only other big game species, has increased in numbers over the past six years and a trapping program is currently in progress to gain information on their distribution and movements. Research is also being conducted on the ecology and biology of small game species such as snowshoe hare, arctic hare, willow and rock ptarmigan and ruffed grouse. Waterfowl management is conducted by federal authorities.

The wild fur industry in Newfoundland, as elsewhere, has been characterized by short-term instability and a long-term decline. However, recent fur sales have set record prices and this suggests that the decline of the past decade may be temporarily halted. The number of trappers in the province is similar to what it was ten years ago. As a result of this continued interest by trappers, research and management studies are being conducted on all fur bearers. Previously, beaver was the only fur bearer benefiting from a management program. Studies are continuing on the biology of the endangered Newfoundland pine marten. It is hoped that these studies will provide the information necessary to produce the management program required to ensure survival of the species.

Prince Edward Island. The Fish and Wildlife Division of the Environmental Control Commission have full or partial responsibility for research and management of all wildlife on Prince Edward Island. All non-migratory wildlife are the full responsibility of the province while the management responsibilities for fish and migratory birds are shared with the federal government. A prime responsibility is the continual monitoring of game populations to assist in setting seasons and bag limits.

Attempts are being made to establish a viable population of pheasants by the introduction of new species and continued evaluation of their performance. Habitat improvement is of prime importance for all forms of wildlife. Fishery management consists largely of the building of fish ladders to facilitate fish passage and other stream improvement measures such as stream bank stabilization. Habitat improvement for waterfowl consists mainly of flooding marshes for waterfowl production, several projects being jointly undertaken with Ducks Unlimited (Canada). In addition, several wildlife management areas are being developed to allow for special management techniques where required. Fur-bearer management is increasingly important with the red fox being the principal fur bearer on Prince Edward Island.

Land acquisition, primarily marsh and fragile habitat, has assumed a very important role in wildlife management on Prince Edward Island.

Nova Scotia. The Wildlife Division of the Department of Lands and Forests conducts research and management programs, the results of which will help to ensure that the wildlife resource will continue to contribute to the mental, physical and economic well-being of the people of Nova Scotia.

Big game species in the province are undergoing studies to compile annual data on harvest patterns, age and sex ratios, reproduction, behaviour, etc. Wild fur bearers include beaver, muskrat, mink, otter, wildcat, lynx, fox, raccoon and weasel and these provide a supplementary income for some 3,500 persons who harvest wild furs worth from \$100,000 to \$200,000 annually. At present, most attention is directed toward the beaver which is the most valuable fur bearer taken. The Trappers Association of Nova Scotia is organized so that persons closest to the resource may have some say in its wise use and management. One of the aims of the Association is to promote improved marketing and handling of the raw furs taken by trappers so as to upgrade over-all fur quality and thus command more profitable market prices for trappers. Particular emphasis is placed on various forest cutting practices and deer

management where a co-operative program has been developed between a major pulp company and the Department.

Migratory bird management is shared jointly by the Canadian Wildlife Service and the provincial Wildlife Division. Established programs relevant to population inventories, banding, harvest levels, etc., are conducted on an annual basis by the Division. All major waterfowl areas in the province have been carefully evaluated, including the off-shore islands which possess unique ecological features, with the objective of retaining them for the benefit of future generations, and several large waterfowl areas are now owned by the province. The role played by Ducks Unlimited (Canada) has been extremely valuable in establishing a successful program of waterfowl habitat improvement in Nova Scotia. Various techniques are employed annually to determine population levels and other factors of upland game species that are essential in formulating proposals aimed at the wise use and management of the resource.

There are 19 federal and provincial areas in Nova Scotia totalling about 500,000 acres of land and water where wildlife is protected. Among them is the Provincial Wildlife Park at Shubenacadie, where a program of studies relating to parasites and disease and the rearing of wildlife for release is a feature additional to its function as a recreational and educational park. Mention should also be made of the very important role of Acadia University in the provincial wildlife program. Various research programs conducted by that institution and the free exchange of ideas between the two agencies have greatly enhanced the resource management efforts in Nova Scotia.

New Brunswick. Big-game management in New Brunswick is the responsibility of the Department of Natural Resources. Biological studies of white-tailed deer, moose and black bear are carried out each year in an attempt to control the utilization of these valuable wildlife species. Data indicate that the deer, moose and bear populations have improved significantly under the current hunting programs. Fourteen deer environment units form the basis for the deer management program. Studies include aerial censuses of wintering areas to assess the severity of winter and yarding conditions throughout the province.

In 1972, moose management zones were established in an attempt to control the distribution of hunting pressure and moose harvest. Moose licences are restricted to resident hunters and the limited number of licences are awarded at a public drawing. Biological studies indicate that the moose populations have improved in numbers and condition under the current management program. Beaver, muskrat and bobcat are the three most important fur-bearing animals in the province. Each autumn aerial surveys of active beaver colonies are conducted throughout the province to keep a continuing record of population trends.

Grouse, ducks, geese and woodcock are the most important game birds in the province. For each, information is gathered annually on the number of hunters, number of days in the field and the size of the harvest. Several surveys are conducted during the year to determine the well-being of these bird populations. They include population censuses, measures of production and aerial observations of the distribution of waterfowl. Co-operative programs are undertaken on migratory birds with the Canadian Wildlife Service as management responsibilities are shared by both levels of government.

Quebec. The management and protection of wildlife within Quebec is the responsibility of the Fish and Game Branch of the Department of Tourism, Fish and Game. The Branch has two Services, one dealing with wildlife management and the other with conservation. The Wildlife Service is responsible for management, particularly of those species of interest to hunters and fishermen. The work of staff biologists, who are assigned to geographical units known as management districts, includes the collection of precise data on animal populations and habitats in the respective areas. In connection with the management of the fisheries resources, wildlife managers have recourse to the services and resources of the Fish Hatchery Division and the Technology and Engineering Services Division; the former operates six provincial hatcheries, inspects commercial hatcheries, and controls imports of fish eggs and species of salmon brought in for propagation. The Wildlife Service also administers and maintains the Quebec Zoological Gardens. The Conservation Service works closely with the Wildlife and Parks Services and is responsible for enforcing fishing and hunting regulations and for informing the public of the existence of such regulations and of their scope and importance. The Wildlife Conservation Act, which came into force in December 1969, is intended to protect fish and wild animal species within the province.

Ontario. The objective of wildlife management programs in Ontario is to maximize the benefits of the wildlife resource to the residents of the province by providing high-quality recreational opportunities for hunting and viewing and by providing economic returns.

The two most important factors limiting deer numbers are the deterioration of the range and a series of severe winters. The deterioration of the range is caused by a current lengthy pause in logging and by the elimination of large fires in the last few decades, so that the vegetation needed for winter food is allowed to grow too tall for deer-browsing. Many recent winters, including the last four, were too severe for many deer to survive until the next summer or to successfully raise their young. An important aspect of the management program is the improvement and increase of existing winter range. Moose management is concentrated on intensive production and harvest inventory and evaluation of the effect of various forest practices on moose range. Ultimately, moose range and forest management will be integrated in such a way as to optimize both fibre and moose production.

Upland wildlife management programs pertain to populations of smaller animals and include habitat management on private lands through extension programs and by agreement, as well as on Crown lands. Waterfowl banding is important in developing a reasonable management program for an international resource. Re-establishment of a breeding population of the giant Canada goose in southern Ontario is a specialized part of the Ontario migratory bird program.

The wildlife management areas that have been established provide opportunities for nature study and hunting in southern Ontario, where virtually all lands are privately owned. Their existence also ensures preservation of valuable wetlands.

Increased effort is being directed to management of beaver populations in the province because of their value to some 10,000 trappers and the impact of their activities on the environment.

Some 7,000 beaver specimens were collected and analyzed during the last three years and hundreds of traplines were surveyed by air to locate beaver colonies. Monthly summaries of fur bearers taken by each trapper are now prepared through a computer program. Expansion of the use of computer data will help to provide population dynamics information, habitat evaluation and pelt priming information for use in management of the resource. The harvest of beaver, marten, and fisher is controlled by quota. On Crown lands there are some 2,300 registered traplines on which professional trappers, with assistance from specialists of the Ministry of Natural Resources, practise wildlife management not unlike animal husbandry. An increasing number of trappers engage in habitat improvements, such as planting aspen for beaver, and in feeding marten, fisher and other wildlife on their areas.

Returns to trappers from the fur harvest in 1971-72 were about \$4 million. Recent surveys indicate that many trappers, especially those in northern Ontario, also depend on the meat from certain fur bearers to supplement their family food supplies.

Staff of the Ministry of Natural Resources, with the co-operation of the Ontario Trapper's Association, conduct over one hundred trappers' meetings annually where new and humane trapping techniques are introduced and discussed, pelt preparation is demonstrated, and animal biology and management practices are taught. The Ministry also encourages use of the humane conibear trap through an exchange of traps for beaver biological material necessary for the best management of this fur bearer. About three quarters of the fur produced is sold through the Ontario Trapper's Association auction house at North Bay.

Manitoba. The Manitoba Department of Mines, Resources and Environmental Management is responsible for the management and conservation of the province's wildlife resources. Authority provided by provincial legislation (the Wildlife Act, the Predator Control Act and Regulations) allows for legal protection and management of 25 mammals, 160 birds and two reptiles that occur in the province. The Federal Migratory Birds Convention Act deals with the protection of migratory game birds, migratory insectivorous birds and migratory non-game birds. In September 1971, Manitoba became the first province to regulate the commercial harvest of amphibians and reptiles. Research and management of this resource continue.

The Department is made up of five Divisions (Mines and Departmental Services, Environmental Management, Resources Management, Water Resources and Technical Services), each responsible for one or more aspects of wildlife research and management.

Wildlife authorities manage over 50 game hunting areas, 40 trapping areas, 30 wildlife, game bird, goose and fur-bearing animal refuges and 24 wildlife management areas. The

distribution of hunting and trapping pressure by setting definite seasons and bag limits is one of the major management tools utilized. Considerable effort is also being directed toward wildlife habitat acquisition and development.

Saskatchewan. Management of the province's wildlife resource is administered by the Fisheries and Wildlife Branch of the Department of Natural Resources. Legislative authority is provided through the Game Act and the Fur Act. The objective of the Department's wildlife management program is to provide maximum viewing, recreational hunting and commercial fur harvesting opportunities to residents of the province, compatible with the wildlife resource and its habitat. To achieve this objective, the Branch administers a wildlife research and management program. Research projects are undertaken to determine production of the most important wildlife species; determine habitat conditions for wildlife; investigate effects of land use practices on the wildlife resource; study limiting factors of some wildlife populations; determine diseases of certain wildlife species and their relative importance on wildlife populations; and develop techniques which will facilitate the maximum utilization of the wildlife resource on a sustained-yield basis. Thus, the Wildlife Research Unit is able to provide basic information on the resource to the Game Administrative, Game Surveys and Fur Units who then have the responsibility to develop and implement the necessary development programs.

Reduction of wildlife habitat, a result of intensive agricultural practices, is at present a major concern. A Wildlife Development Fund has been established. It is financed from game licences which provide approximately \$230,000 annually for the acquisition, development and improvement of wildlife lands. A Game Advisory Committee, having representation from various interest groups, is consulted yearly on proposed game seasons, bag limits and management programs.

Alberta. The conservation and management of wildlife resources in Alberta are under the jurisdiction of the Fish and Wildlife Division of the Department of Lands and Forests. The Division initiated several new research projects in 1972: the determination of the condition of whitefish in Lesser Slave Lake; testing experimental techniques, other than by gill-nets, to improve harvesting efficiency; studies of the walleye population in the Athabasca Delta; and the evaluation of stream management projects.

Construction proceeded on a new fish hatchery in Calgary to replace a hatchery formerly located on private property.

A Habitat Protection and Development Section was formed setting conditions on development applications for mines, highways, exploration, etc. A Wildlife Habitat Protection and Development program assembled a map to indicate prime and winter ranges for ungulates and key production and staging areas for waterfowl. A number of habitat development projects were initiated, including controlled burning of elk range for higher forage production, creation of pheasant habitat and a waterfowl area. Research projects continued on pheasants, geese, deer and sheep.

The Division entered into a program to reduce the frequency of night-lighting in certain regions of the province. The use of aircraft at night was incorporated into the program and has proved to be effective in this special area of enforcement work. A study to assess the white-tailed deer population response to season closure and saturation enforcement control was continued for the second year. A research program has been initiated to develop a method of positive identification of meat samples by species.

British Columbia. The Fish and Wildlife Branch of the Department of Recreation and Conservation is responsible for the protection, enhancement and wise use of the wildlife and freshwater fish resources of British Columbia. Administrative and technical headquarters are in Victoria, with six regional headquarters in the main centres of population, as well as 44 district offices, three fish hatcheries and a number of permanent field stations throughout the province.

The Branch promotes the wise and orderly use of upland birds, game animals and sport fish by licensing hunters and anglers and by determining and enforcing closed seasons, bag limits and other regulatory measures. It licenses and regulates the trapping of fur-bearing animals, the commercial propagation of game birds and fish, the activities of big-game guides and generally acts as manager of the province's wildlife.

Through close contact and liaison with other government agencies and with private concerns involved in mining, forestry, agriculture, water use and transportation, the Branch actively fosters the preservation of a suitable land and water environment for wildlife and outdoor recreation.

The Branch enhances the abundance and health of desirable species of animals by the acquisition of key areas of range for big game and waterfowl, by the operation of fish hatcheries and the stocking of lakes and by improving habitat for both fish and wildlife. To increase the understanding of the wildlife resource and to provide a proper basis for wise management, the Branch conducts and supports considerable fundamental and applied research on fish and wildlife and their environment.

The Branch's objective is to make a significant contribution to the economy and well-being of British Columbia through wise management of game resources and of non-tidal fisheries. It attempts to maintain British Columbia's waters and lands in a state of continuing productivity through attention to such major matters as pollution and land use, and encourages planned or integrated use of lands for forestry, agriculture and wildlife. The Branch also creates public awareness, through programs of education and information, of the values of wildlife resources and of the principles of wise management; protects the resource from unlawful and indiscriminate use and waste; and furthers the rights of the public as a consumer of the wildlife resource.

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Tables

.. not available
... not appropriate or not applicable
— nil or zero
— too small to be expressed

e estimate
p preliminary
r revised
certain tables may not add due to rounding

10.1 1968 National Forest Inventory

Province or territory	Forest land <i>sq miles</i>		Non-reserved forest land tenure <i>sq miles</i>			Volume ³ <i>MM cu ft</i>		Total
	Total ¹	Non-reserved ²	Crown provincial	Crown federal	Privately owned	Soft-woods	Hard-woods	
Newfoundland	47,576	47,176	38,428	—	8,748	4,010	—	4,010
Prince Edward Island	975	964	9	2	953	98	52	150
Nova Scotia	15,555	15,024	3,125	33	11,866	6,045	2,539	8,584
New Brunswick	24,464	24,389	11,139	511	12,739	11,947	4,921	16,868
Quebec	268,480	268,383	240,161	303	27,919	96,954	33,443	130,397
Ontario	188,334	180,588	160,916	1,761	17,911	66,593	44,830	111,423
Manitoba	60,108	59,231	53,024	421	5,786	9,991	2,763	12,754
Saskatchewan	40,500	38,206	36,134	592	1,480	9,913	7,087	17,000
Alberta	106,755	97,230	93,481	844	2,905	36,019	23,558	59,577
British Columbia	215,744	210,684	199,891	781	10,012	261,313	7,322	268,635 ⁴
Yukon Territory	81,200	81,200	—	81,200	—	..	..	..
Northwest Territories	194,600	194,600	—	194,600	—	..	..	..
Canada	1,244,291	1,217,675	836,308	281,048	100,319	502,883	126,515	629,398

¹ Land capable of producing stands of trees 4" dbh and larger on 10% or more of the area.
² Excludes land in parks, game refuges, water conservation areas and nature preserves, where, by legislation, wood production is not primary.
³ Non-reserved inventoried areas only; excludes Labrador, Yukon Territory and Northwest Territories for which no data are available.
⁴ Mature timber only.

10.2 Forest utilization and depletion by fire, ten-year average 1960-69

Item	Usable wood <i>MM cu ft</i>	Percentage of total depletion
Products utilized		
Logs and bolts ¹		
Domestic use	2,125	50.7
Exported	20	0.5
Pulpwood		
Domestic use	1,148	27.4
Exported ⁴	101	2.4
Fuelwood (incl. wood for charcoal)	197	4.7
Other products	58	1.4
Total utilization	3,649	87.1
Wastage by forest fires	542	12.9
Total depletion ²	4,191	100.0

¹ Includes some wood used in pulp manufacture.
² Excludes losses caused by insects, disease or natural mortality for which no reliable estimates are available.

10.3 Forest fire losses, 1970, compared with ten-year average 1960-69

Item	Average 1960-69	1970
Fires	<i>No.</i>	
Under 10 acres	7,419	9,253
10 acres or over	6,311	8,133
Area burned	<i>acres</i>	
Merchantable timber	1,108	1,120
Young growth	2,365,433	2,616,366
Cut-over lands	607,378	268,004
Non-forested lands	595,656	1,195,732
Estimated values destroyed ¹	<i>\$</i>	
Merchantable timber	115,317	44,645
Young growth	1,047,082	1,107,985
Cut-over lands	16,322,516	11,396,215
Other property burned	11,232,044	6,040,216
Actual cost of fire fighting	3,443,578	3,741,870
Total damage and fire-fighting cost	353,408	94,429
Area under protection	1,293,486	1,519,700
	9,046,697	23,993,828
	25,369,213	35,390,043
	1,491,328	1,573,864

¹ Excludes such values as damage to soil, stream-flow, wildlife, recreation and tourist facilities.

10.4 Forest fires, by cause, 1970, compared with nine-year average 1961-69

Cause	Average 1961-69		1970	
	<i>No.</i>	%	<i>No.</i>	%
Recreation	1,716	23	1,901	21
Settlement	872	12	936	10
Woods operations	297	4	415	4
Railways	379	5	554	6

10.4 Forest fires, by cause, 1970, compared with nine-year average 1961-69 (concluded)

Cause	Average 1961-69		1970	
	No.	%	No.	%
Other industries	329	4	269	3
Incendiary	323	4	306	3
Miscellaneous known	1,164	16	1,272	14
Unknown	410	6	301	3
Total, man-caused	5,490	74	5,954	64
Lightning	1,937	26	3,299	36
Total, all fires	7,427	100	9,253	100

10.5 Volume of wood cut, by province, 1968-70 (thousand cubic feet)

Province or territory	1968	1969	1970
Newfoundland	83,373	83,213	100,610
Prince Edward Island	5,715	5,638	8,636
Nova Scotia	128,209	121,227	113,853
New Brunswick	238,059	236,414	240,664
Quebec	963,090	1,060,070	1,020,550
Ontario	590,964	621,645	593,315
Manitoba	39,183	52,901	44,482
Saskatchewan	64,584	82,130	83,880
Alberta	130,769	145,773	146,331
British Columbia	1,702,455	1,890,052	1,932,628
Yukon Territory and Northwest Territories	3,875	4,753	2,941
Canada	3,950,276	4,303,816	4,287,890

10.6 Volume of wood cut, by type of product, 1968-70 (thousand cubic feet)

Type of product	1968	1969	1970
Logs and bolts	2,381,574	2,593,799	2,671,355
Pulpwood	1,357,039	1,512,369	1,426,783
Fuelwood	165,244	151,346	144,649
Poles and piling	10,560	8,901	7,696
Round mining timber	4,138	3,955	3,341
Wood for charcoal	2,080	1,560	1,440
Fence posts	20,918	20,506	20,365
Fence rails	689	469	896
Miscellaneous roundwood	8,034	10,911	11,365
Total	3,950,276	4,303,816	4,287,890

10.7 Lumber production and shipments and value of all shipments of the sawmill and planing mill industry, by province, 1969 and 1970

Year and province or territory	Lumber		Value of shipments ¹ \$'000	Value of shipments ¹ of goods of own manufacture \$'000
	Production Mfbm	Quantity shipped ¹ Mfbm		
1969				
Newfoundland	10,453	12,589	1,192	1,367
Prince Edward Island	3,780	1,037	87	²
Nova Scotia	206,834	179,842	16,654	20,900
New Brunswick	320,416	320,575	29,918	45,532
Quebec	1,705,523	1,550,266	143,370	181,755
Ontario	840,938	751,736	83,186	105,640
Manitoba	40,333	36,622	2,501	3,315
Saskatchewan	98,689	93,811	8,595	10,414
Alberta	429,133	403,544	33,980	38,934
British Columbia	7,438,515	7,560,243	737,968	858,482
Yukon Territory and Northwest Territories	5,743	6,726	616	²
Canada	11,100,357	10,916,991	1,058,066	1,267,194
1970				
Newfoundland	22,586	19,575	1,817	2,080
Prince Edward Island	1,849	1,849	104	164
Nova Scotia	168,436	172,640	16,310	20,529
New Brunswick	278,888	292,310	27,080	48,445
Quebec	1,579,627	1,490,607	129,337	168,359
Ontario	771,000	730,449	74,632	99,022
Manitoba	30,678	25,747	1,819	3,312
Saskatchewan	52,157	94,068	7,313	9,132
Alberta	409,452	486,794	33,939	39,431
British Columbia	7,349,642	7,636,601	632,203	744,022
Yukon Territory and Northwest Territories	²	²	²	881
Canada	10,671,645	10,957,951	925,358	1,135,377

¹ Shipment figures contain some duplication because sales of lumber from one sawmill to another are reported as shipments by both establishments.

² Confidential.

10.8 Lumber shipments¹ of the sawmill and planing mill industry, by species, 1968-70

Kind of wood	1968		1969		1970	
	Quantity <i>Mfbm</i>	Value \$'000	Quantity <i>Mfbm</i>	Value \$'000	Quantity <i>Mfbm</i>	Value \$'000
Spruce	4,333,519	355,903	4,580,452	395,813	4,442,106	332,690
Douglas-fir	1,980,009	189,275	1,784,319	184,537	1,671,134	145,941
Hemlock	2,098,327	191,320	1,906,858	187,080	1,986,250	168,499
Cedar (red and white)	850,484	92,889	857,712	104,339	829,253	91,934
White pine	266,665	30,421	288,058	35,829	208,968	25,991
Jack pine	339,692	26,640	355,434	28,958	338,442	24,903
Maple	198,808	25,291	209,771	27,850	165,610	22,955
Yellow birch	140,099	19,104	140,413	19,462	114,549	15,244
Lodgepole pine	333,321	26,623	381,914	32,329	413,467	28,330
Balsam fir	143,510	12,787	146,620	12,649	203,735	16,654
Other	302,597	32,154	265,440	29,220	584,437	52,217
Total	10,987,031	1,002,407	10,916,991	1,058,066	10,957,951	925,358

¹ See footnote 1, Table 10.7.

10.9 Veneer and plywood shipments, by type, 1968-70

Type	1968		1969		1970	
	Quantity <i>M sq ft</i>	Value \$'000	Quantity <i>M sq ft</i>	Value \$'000	Quantity <i>M sq ft</i>	Value \$'000
Veneer	2,582,055 ¹	55,450	2,788,589 ¹	56,307	2,655,430 ¹	47,513
Softwood plywood	1,953,735 ²	163,513	1,907,330 ²	171,741	1,858,018 ²	148,428
Hardwood plywood	375,058 ³	41,293	378,323 ³	40,790	323,349 ²	31,489

¹ Surface measure.

² $\frac{3}{8}$ " unsanded basis.

³ $\frac{1}{4}$ " sanded on both sides.

10.10 Pulp shipments and production, 1968-70

Item		1968	1969	1970
Mill shipments of pulp ¹	'000 tons	5,985	6,899	6,665
	\$'000	719,397	826,098	913,287
Groundwood pulp	'000 tons	257	302	324
	\$'000	15,766	18,174	20,399
Chemical pulps	'000 tons	5,708	6,597	6,341
	\$'000	703,207	843,925	892,888
Pulp production ²	'000 tons	16,762	18,590	18,308
Quebec	"	5,918	6,547	6,501
Ontario	"	3,644	3,961	3,969
British Columbia	"	4,378	4,879	4,519
Other provinces ³	"	2,822	3,203	3,319

¹ Includes screenings.

² The differences between these figures and the quantities of mill shipments represent the amounts of pulp further manufactured by the reporting companies.

³ Prince Edward Island is the only province in which there is no production.

10.11 Shipments of basic paper and paperboard, by type and by province, 1968-70

Type and province		1968	1969	1970
TYPE				
Newsprint paper	'000 tons	8,204	8,863	8,764
	\$'000	1,015,794	1,114,707	1,106,688
Book and writing paper	'000 tons	662	731	880
	\$'000	187,145	206,686	238,232
Wrapping paper	'000 tons	459	497	484
	\$'000	92,220	104,303	102,231
Paperboard	'000 tons	1,627	1,745	1,764
	\$'000	239,717	260,509	268,618
All other papers	'000 tons	229	259	226
	\$'000	39,740	46,947	41,446
Total	'000 tons	11,183	12,093	12,118
	\$'000	1,574,616	1,733,151	1,757,215
PROVINCE				
Quebec	'000 tons	5,035	5,418	5,476
	\$'000	701,750	773,739	802,931
Ontario	'000 tons	2,891	3,109	3,071
	\$'000	471,800	507,792	506,120
British Columbia	'000 tons	1,660	1,872	1,833
	\$'000	205,851	237,891	236,769
Other provinces ¹	'000 tons	1,597	1,694	1,738
	\$'000	195,215	213,729	211,395

¹ Prince Edward Island is the only province in which there is no production.

10.12 Exports of pulp and newsprint to Britain, United States and all countries, 1968-71

Commodity and year	Britain		United States		All countries	
	Quantity tons	Value \$'000	Quantity tons	Value \$'000	Quantity tons	Value \$'000
Pulp						
1968	315,271	37,825	3,128,341	416,807	4,971,322	627,874
1969	288,050	36,158	3,807,044	514,242	5,794,575	753,488
1970	377,385	49,540	3,315,519	485,453	5,581,325	785,229
1971	348,912	48,258	3,373,009	480,725	5,241,896	796,334
Newsprint						
1968	438,471	54,862	6,138,552	826,809	7,479,000	989,831
1969	486,916	60,616	6,525,512	919,877	8,235,000	1,125,801
1970	411,665	59,596	6,212,134	872,544	8,090,007	1,110,393
1971	432,788	56,830	6,210,566	880,682	7,797,737	1,084,282

10.13 Persons employed in the primary fishing industry, by province, 1970 and 1971

Province or territory	Sea fisheries		Inland fisheries	
	1970	1971 ^P	1970	1971 ^P
Newfoundland	17,765	17,800 ^e	...	...
Prince Edward Island	2,801	2,677	...	...
Nova Scotia	11,018	10,688	...	...
New Brunswick	5,081	5,148	134	121
Quebec	5,092	5,252	649	571
Ontario	...	...	1,836	1,999
Manitoba	...	...	2,653	1,394 ¹
Saskatchewan	...	...	2,154 ²	1,667 ¹
Alberta	...	...	1,863 ²	628 ¹
British Columbia	11,647	11,015	...	...
Yukon Territory	...	...	42	78
Northwest Territories	...	...	214	198 ¹
Total	53,404	52,580	9,545	6,656

¹ Fishermen who sold fish to the Freshwater Fish Marketing Corporation.² Licences issued.**10.14 Value of all fishery products, by province, 1970 and 1971 (thousand dollars)**

Province or territory	1970	1971
Newfoundland	85,104	94,943
Prince Edward Island	18,375	16,143
Nova Scotia	105,939	127,215
New Brunswick	67,404	68,629
Quebec	24,130	26,022
Ontario	13,070	13,896
Manitoba	...	...
Saskatchewan	...	...
Alberta	...	...
Northwest Territories	...	...
British Columbia and Yukon Territory ¹	123,333	120,167
Total ²	426,601	461,833
Products from the sea	401,075	436,569
Products taken inland	25,526	25,264

¹ Includes landings by Canadian fishermen in United States ports.² Totals are lower than the sum of provincial totals because duplications resulting from intershipments between provinces are removed.**10.15 Landings of sea and inland fish and other sea products, by province, 1970 and 1971**

Province or territory	1970		1971	
	Quantity '000 lb.	Value \$'000	Quantity '000 lb.	Value \$'000
Newfoundland	986,542	34,807	873,121	35,693
Prince Edward Island	101,046	9,571	97,508	9,426
Nova Scotia	592,950	53,448	657,876	57,660
New Brunswick	453,037	17,543	370,124	16,251
Quebec	258,240	11,158	240,969	10,594
Ontario	46,081	6,535	42,795	6,948
Manitoba	13,183	2,151	15,739	2,403
Saskatchewan	12,213	2,083	12,539	1,802
Alberta	6,896	826	5,347	730
British Columbia ¹	238,499	60,255	228,754	58,588
Yukon Territory	55	24	52	24
Northwest Territories	3,832	1,093	3,984	960
Total	2,712,574	199,494	2,548,808	201,079
Sea fish	2,620,935	186,699	2,453,408	187,622
Inland fish	91,639	12,795	95,271	13,383
Other sea products	..	..	129	74

¹ Includes halibut landed in United States ports.

10.16 Landings of the chief commercial fish, 1970 and 1971

Area and species	1970		1971 ^p	
	Quantity '000 lb.	Value \$'000	Quantity '000 lb.	Value \$'000
ATLANTIC COAST				
Groundfish	1,159,087	54,566	1,138,020	59,556
Catfish	7,147	248	9,511	378
Cod	483,240	21,956	449,168	25,132
Flounder and sole	324,984	15,820	305,267	14,880
Haddock	49,483	5,296	53,601	5,980
Hake	16,974	588	27,539	1,215
Halibut	3,465	1,592	3,286	1,579
Pollock	20,008	773	22,108	999
Redfish	239,227	7,824	248,624	8,655
Other	14,559	469	18,916	738
Pelagic and estuarial	1,131,788	23,640	990,701	19,367
Alewives	7,233	156	10,281	237
Herring ¹	1,055,898	13,251	924,361	13,160
Mackerel	34,620	1,252	32,936	1,058
Salmon	4,611	2,727	4,035	2,250
Smelts	3,976	420	3,038	358
Swordfish	8,016	3,689	—	—
Other	17,434	2,145	16,050	2,304
Molluscs and crustaceans	84,335	47,507	88,475	49,851
Clams	9,422	721	12,677	1,074
Lobsters	36,588	29,661	38,159	33,211
Oysters	2,718	542	2,713	550
Scallops	12,980	14,101	11,171	12,961
Other	22,627	2,482	23,755	2,055
Other ²	8,020	289	7,458	260
Total, Atlantic Coast	2,383,230	126,002	2,224,654	129,034
PACIFIC COAST				
Groundfish	54,095	12,597	52,308	10,555
Cod (gray)	5,019	413	8,749	779
Flounder and sole	12,320	759	11,120	759
Halibut ³	29,525	10,588	25,294	8,135
Lingcod	4,602	604	4,342	649
Sablefish	494	111	496	111
Other	2,135	122	2,307	122
Pelagic and estuarial	171,933	46,036	164,787	46,578
Herring	8,521	290	22,082	556
Salmon	154,486	45,076	132,367	44,479
Chum	36,919	6,416	11,928	2,150
Coho	27,498	12,563	27,867	10,630
Pink	52,165	8,018	37,923	6,528
Sockeye	24,790	9,960	37,564	15,910
Spring	12,988	8,082	16,908	9,206
Other	126	37	177	55
Other	8,926	670	10,338	1,543
Molluscs and crustaceans	12,471	1,622	11,659	1,455
Clams	2,312	184	2,547	235
Crabs	2,548	460	1,963	425
Oysters	5,977	530	6,327	536
Shrimps and prawns	1,537	422	735	241
Other	97	26	87	18
Other ²	—	—	—	—
Total, Pacific Coast	238,499	60,255	228,754	58,588
INLAND				
Freshwater fish	74,127	12,080	81,209	13,094
Bass	209	46	4	4
Catfish	638	132	4	4
Herring, lake (cisco) and tullibee	3,994	344	4	4
Perch	22,122	3,528	4	4
Pickrel (yellow)	7,157	2,547	6,063	2,078
Pike	7,279	508	6,639	503
Saugers	756	251	775	247
Smelts	4	4	4	4
Sturgeon	125	113	4	4
Trout	2,175	463	1,691	330
Whitefish	19,675	3,695	19,410	3,862
Other	9,997	453	46,631	6,074
Other ⁶	17,512	715	14,062	289
Total, Inland	91,639	12,795	95,271	13,383
Total	2,713,368	199,052	2,548,679	201,005

¹ Includes sardines.² Includes livers and scales.³ Includes landings by Canadian fishermen at United States ports.⁴ Included in "Other".⁵ Sea fish caught inland.

10.17 Market value of all fishery products, by area and species, 1970 and 1971 (thousand dollars)

Area and species	1970 ^r	1971 ^p	Area and species	1970 ^r	1971 ^p
ATLANTIC COAST			Pelagic and estuarial	101,988	101,138
Groundfish	118,381	147,069	Herring	682	2,256
Catfish	792	1,332	Salmon	99,597	96,926
Cod	46,151	63,984	Chum	15,922	5,128
Flounder and sole	31,037	34,405	Coho	19,623	19,586
Haddock	8,078	10,018	Pink	26,045	20,017
Hake	680	1,808	Sockeye	21,773	33,437
Halibut	1,800	1,914	Spring	11,578	13,896
Pollock	1,903	2,912	Other	4,656	4,862
Redfish	20,044	22,714	Other	1,709	1,956
Other	7,896	7,982	Molluscs and crustaceans	2,866	2,730
Pelagic and estuarial	65,571	69,160	Clams	457	503
Alewives	338	603	Crabs	1,108	947
Herring	47,338	52,883	Oysters	590	806
Mackerel	3,127	3,565	Shrimps and prawns	667	435
Salmon	4,624	4,474	Other	44	39
Sardines	1	1	Other	231	273
Smelts	991	854	Total, Pacific Coast	123,297	120,167
Swordfish ²	4,962	—	INLAND		
Other	4,191	6,781	Freshwater fish	24,128	..
Molluscs and crustaceans	75,504	81,988	Bass	92	..
Clams	1,474	2,388	Catfish	264	..
Lobsters	46,439	49,730	Herring, lake (cisco) and tullibee	748	..
Oysters	1,293	1,134	Perch	6,982	..
Scallops	18,438	19,330	Pickarel (yellow)	4,899	..
Other	7,860	9,406	Pike	1,609	..
Other	18,322	18,185	Saugers	4	..
Total, Atlantic Coast	277,778	316,402	Sturgeon	207	..
PACIFIC COAST			Trout	979	..
Groundfish	18,212	16,026	Whitefish	7,090	..
Cod (gray)	752	1,299	Other	1,258	..
Flounder and sole	1,819	1,829	Other	1,398	..
Halibut ³	14,025	11,367	Total, Inland	25,526	25,264
Lingcod	1,038	1,003	Total	426,601	461,833
Sablefish	226	219			
Other	352	309			

¹ Included with herring.² Exports.³ Includes halibut landed by Canadian fishermen in United States ports.⁴ Included with pickarel.**10.18 Pacific Coast production of canned salmon, 1970 and 1971**

Kind	1970		1971 ^p	
	Quantity 48-lb. cases	Value \$'000	Quantity 48-lb. cases	Value \$'000
Chum	242,389	7,715	98,508	3,169
Coho	114,555	5,128	221,463	10,337
Pink	660,777	24,310	502,324	18,803
Sockeye	395,606	21,396	568,756	33,064
Spring	10,024	339	11,653	387
Steelhead	531	20	1,301	44
Total	1,423,882	58,908	1,404,005	65,804

10.19 Atlantic Coast production of frozen fillets and fish blocks, 1970 and 1971

Area and species	1970		1971 ^p	
	Quantity '000 lb.	Value \$'000	Quantity '000 lb.	Value \$'000
NEWFOUNDLAND	144,441	45,297	135,709	55,961
Cod	59,501	15,670	62,547	25,613
Haddock	1,251	573	851	396
Redfish	25,432	7,604	16,229	5,131
Flatfish	56,650	20,872	53,656	23,877
Other	1,607	578	2,426	944
MARITIMES	75,353	28,525	98,481	38,541
Cod	23,948	7,980	23,548	10,068
Haddock	9,219	4,754	10,956	5,758
Redfish	19,978	6,287	32,092	9,962
Flatfish	15,415	7,592	15,621	7,411
Other	6,793	1,912	16,264	5,342
QUEBEC	29,826	9,692	32,818	11,947
Cod	10,045	2,957	9,424	4,109
Redfish	17,017	5,581	19,024	6,485
Flatfish	1,886	958	2,296	1,018
Other	878	196	2,074	335
TOTAL, ATLANTIC COAST	249,620	83,514	267,008	106,449
Cod	93,494	26,607	95,519	39,790
Haddock	10,470	5,327	11,807	6,154
Redfish	62,427	19,472	67,345	21,578
Flatfish	73,951	29,422	71,573	32,306
Other	9,278	2,686	20,764	6,621

10.20 Pelts of wildlife fur-bearing animals taken, by kind, years ended June 30, 1970-71 and 1971-72

Kind	1970-71 fur season			1971-72 fur season		
	Pelts No.	Total value \$	Average value \$	Pelts No.	Total value \$	Average value \$
Badger	2,014	20,900	10.38	2,121	23,384	11.02
Bear						
White	361	77,824	215.58	389	128,000	329.05
Black or brown	2,007	39,784	19.82	2,522	62,395	24.74
Grizzly	14	980	70.00	7	915	130.71
Beaver	355,379	4,461,127	12.55	375,232	6,445,201	17.18
Coyote	28,462	361,385	12.70	46,500	727,258	15.64
Ermine (weasel)	48,233	27,453	0.57	38,964	25,047	0.64
Fisher	6,637	176,452	26.59	8,278	242,963	29.35
Fox						
Blue	83	969	11.67	133	1,657	12.46
Cross and red	34,744	409,616	11.79	51,348	819,882	15.97
Silver	316	4,793	15.17	470	8,432	17.94
White	26,218	322,513	12.30	33,655	382,245	11.36
Not specified	13	156	12.00	2,243	22,442	10.01
Lynx	42,365	1,157,606	27.32	53,589	2,040,085	38.07
Marten	52,312	413,317	7.90	56,231	468,280	8.33
Mink	67,378	527,497	7.83	72,674	855,806	11.78
Muskrat	1,572,885	2,110,101	1.34	1,794,544	3,160,480	1.76
Otter	15,654	435,434	27.82	15,261	511,877	33.54
Rabbit	18,826	2,726	0.14	10,021	1,002	0.10
Raccoon	31,818	113,250	3.56	28,303	154,038	5.44
Seals						
Fur, North Pacific ¹	9,898	351,230	35.48	9,138	310,728	34.00
Hair	185,126	1,677,904	9.06	166,629	1,473,280	8.84
Skunk	178	64	0.36	179	50	0.28
Squirrel	475,570	153,722	0.32	390,884	217,971	0.56
Wildcat	3,408	42,374	12.43	3,842	81,862	21.31
Wolf	2,475	49,576	20.03	3,804	115,628	30.40
Wolverine	596	35,185	59.04	561	40,089	71.46
Total	2,982,970	12,974,038	...	3,167,522	18,320,997	...

¹ Commonly known as Alaska fur seal; value figures are the net returns to the federal government for pelts sold.

10.21 Pelts of fur-bearing animals produced, by province, years ended June 30, 1970-71 and 1971-72

Province or territory	1970-71 fur season			1971-72 fur season		
	Pelts No.	Value \$	% of total value	Pelts No.	Value \$	% of total value
Newfoundland	117,202	946,279	3.4	91,848	749,147	2.3
Prince Edward Island	10,286	101,767	0.4	7,667	107,112	0.3
Nova Scotia	147,118	1,275,531	4.6	146,378	1,631,329	4.9
New Brunswick	35,943	262,311	1.0	38,362	407,566	1.2
Quebec	476,043	3,237,515	11.8	439,273	3,456,742	10.5
Ontario	1,161,917	7,807,003	28.4	1,023,532	9,688,164	29.3
Manitoba	620,915	3,066,438	11.2	674,415	3,750,966	11.4
Saskatchewan	556,168	1,961,118	7.1	644,326	2,631,856	8.0
Alberta	672,870	3,213,471	11.7	685,985	4,837,851	14.7
British Columbia	439,790	3,631,748	13.2	314,175	3,537,066	10.7
Yukon Territory	13,891	41,727	0.2	21,340	136,007	0.4
Northwest Territories	176,931	1,112,562	4.0	197,489	1,424,444	4.3
Canada ¹	4,483,486	27,481,493	100.0	4,323,947	33,009,928	100.0

¹ Totals include pelts and values not allocated to a province or territory, mainly Alaska fur seal and Atlantic Coast hair seal.

10.22 Mink farms and value of pelts produced thereon, by province, 1969-71

Province	Mink farms at year-end			Value of mink pelts produced on fur farms (\$'000)		
	1969	1970	1971	1969	1970	1971
Newfoundland	12	5	—	132	108	50
Prince Edward Island	9	7	5	75	97	99
Nova Scotia	149	140	109	1,241	1,141	1,418
New Brunswick	17	16	8	155	125	114
Quebec	70	58	49	1,595	1,520	1,489
Ontario	331	278	237	6,067	5,105	5,561
Manitoba	108	81	67	2,322	1,348	1,088
Saskatchewan	53	38	39	935	644	529
Alberta	93	78	58	2,079	1,429	1,491
British Columbia	175	136	103	4,049	2,950	2,795
Total	1,017	837	675	18,650	14,467	14,634

10.23 Exports and imports of furs, by kind, 1971 and 1972 (thousand dollars)

Kind of fur	1971			1972		
	Britain	United States	All countries	Britain	United States	All countries
EXPORTS						
Undressed						
Beaver	1,737	714	5,184	2,234	1,156	7,488
Chinchilla	5	93	113	—	119	132
Ermine (weasel)	28	1	29	36	—	36
Fisher	25	147	192	65	133	311
Fox, all types	217	437	758	537	780	1,845
Lynx	117	495	721	399	863	1,953
Marten	112	294	518	156	458	742
Mink	844	5,439	9,956	855	5,032	11,402
Muskrat	1,386	168	1,968	1,992	122	2,460
Otter	60	89	331	71	95	542
Rabbit	—	10	16	—	5	5
Seal	564	40	1,833	386	2	1,844
Squirrel	182	2	188	217	—	219
Wolf	127	105	248	246	227	589
Other	115	176	540	291	160	778
Dressed						
Mink	—	100	503	21	35	299
Raccoon	—	4	4	—	14	50
Fur plates, mats, etc.	1	36	84	—	66	151
Other	10	437	1,110	82	224	636
Fur goods apparel	996	3,270	17,438	1,645	3,389	20,244
Total	6,526	12,057	41,734	9,233	12,880	51,726
IMPORTS						
Undressed						
China and Jap mink	105	—	259	361	9	761
Fox	875	840	3,288	1,448	1,186	5,427
Kolinsky	55	13	159	113	2	250
Mink	1,716	3,349	10,617	1,543	4,491	12,027
Muskrat	—	2,688	2,688	2	3,671	3,673
Persian lamb	172	93	395	47	102	506
Rabbit	—	—	1	1	2	3
Raccoon	16	1,999	2,021	8	3,468	3,490
Other	580	1,005	3,845	318	1,678	5,647
Dressed						
Hatters' furs	—	115	176	—	208	335
Mink	75	815	992	21	1,155	1,188
Seal	—	1,339	1,537	—	1,362	1,493
Sheep and lamb	1,220	989	2,870	1,330	1,651	4,332
Fur plates, mats, etc.	132	169	971	153	530	1,533
Other	51	411	987	141	498	1,361
Fur goods apparel	150	77	834	112	124	1,034
Total	5,147	13,902	31,640	5,598	20,137	43,060

Sources

10.1 - 10.4 Canadian Forestry Service, Department of the Environment.

10.5 - 10.19 Manufacturing and Primary Industries Division, Industry Statistics Branch, Statistics Canada.

10.20 - 10.23 Agriculture Division, Industry Statistics Branch, Statistics Canada.

Chapter 11

Agriculture

11.1 Trends and highlights, 1972

The year began on an encouraging note with the announcement by the federal government of record-breaking agricultural sales in 1971. Exports totalled \$1,984 million, with wheat, rapeseed and barley the leading commodities.

On January 1, the United States eliminated tariffs against a number of agricultural products including fresh apples, maple syrup and sugar, turnips, cattle hides, sheep and lambs, and fruit-tree seedlings, allowing about 30% of Canada's agricultural exports into that country duty free compared with 20% under previous regulations.

The first permits for the import of cattle from Australia were issued to 75 applicants, and 246 cattle — Murray Grays and Australian Shorthorns — arrived at Edmonton International Airport on August 2 where they remained in quarantine until mid-October. Permits were also granted to 613 applicants to import 911 cattle from Europe.

The Minister of Agriculture pledged Canada to a contribution of \$34 million to the World Food Programme. The pledge, \$4 million higher than the previous commitment, was for two years; since the program started in 1962, Canada has ranked second among contributing countries.

The National Farm Products Marketing Council was appointed in March to oversee the establishment and operation of national marketing agencies for various farm commodities. Public hearings into the establishment of a national egg marketing agency were held in Ottawa, Moncton and Calgary in September.

Project 75, a new federal approach to agricultural co-ordination and development based on a market-oriented concept, began early in the year. The project concentrated on beef, oilseeds and high-energy grains and involved consultation, analysis and co-ordination of the various segments of the commodity systems. Before the end of the year, Project 75 had evolved into a new branch within the Department, known officially as the Food Systems Branch.

New regulations for labelling pesticides came into effect November 25 under the Pest Control Products Act, providing authority to classify pest control products as either domestic or commercial so that they can be more easily channelled through the marketplace to qualified users. In addition to being thoroughly tested before they can be registered, pesticides will now be classified according to standards of safety to humans and to potential effects on wildlife and the environment. The sale of potent products may be restricted to authorized persons to ensure safe use.

In mid-February, the Minister of Agriculture announced the implementation of the Small Farm Development Program on a national scale and by the end of 1972 six provinces — Alberta, Ontario, British Columbia, New Brunswick, Prince Edward Island and Nova Scotia — had signed agreements with the federal government. Under these agreements the Department, jointly with provincial departments of agriculture, provides farm management and counselling services to participating farmers, and extends credit to small farm operators to purchase the land required to develop a profitable business.

Bill C-5, amending the Farm Credit Corporation Act, received Royal Assent July 11. The most significant changes were an increase in the loan ceiling for individual operators, removal of the minimum age of 21 years as a qualification for a loan and restriction of loans to Canadian citizens and landed immigrants.

Federal assistance was given to farmers in Ontario and Quebec whose crops were damaged by flooding. The assistance included \$400 cash grants to individual farmers in wet-damaged areas, and loans, fodder subsidies and subsidies on cattle feeds.

About 11,000 wheat producers in eastern Canada received cheques in September to cover benefits under the federal government's two-price wheat payment system. Total payments exceeded \$5 million, individual payments averaging \$350.

Five new wheat grades were introduced on August 1. The new grades of bread wheat varieties are No. 2 Western Red Spring Wheat, which replaces No. 3 Northern and a small part of No. 4 Northern; and No. 3 Western Red Spring Wheat, which replaces the bulk of No. 4 Northern, No. 5 wheat and all Garnet grades. The new utility grades are No. 1 Canada Utility

and No. 2 Canada Utility, which include feed and non-bread varieties, and No. 3 Canada Utility which includes the former No. 6 and Feed wheat. Canada No. 1 Western Red Spring Wheat, which replaced No. 1 Hard and No. 1 Northern and No. 2 Northern, was introduced in 1971.

A beef carcass appraisal service was instituted to identify animals at slaughter and, for the first time, to relay carcass information back to the producers of feeder calves and finished cattle. A new beef grading system was implemented on September 5, introducing a more precise system of measurement for quality and quantity in a carcass.

A nation-wide cattle blood-typing service at a nominal charge was announced; tests are performed at the Health of Animals Branch pathology laboratory at Guelph, Ont.

A program was implemented during the year to reduce the Canadian laying flock in order to lower the egg surplus that was disrupting marketing channels. Payments based on the slaughter of one million hens within eight weeks were made, and a higher assistance rate paid if slaughtering took place before the end of the period. The program ended successfully June 27 with producer prices strengthening.

An immunizing vaccine for Venezuelan Equine Encephalomyelitis — a serious virus disease affecting the central nervous system of horses — became available May 1. The federal government also offered to pay compensation to horse owners who have their animals destroyed under the program to eliminate equine infectious anemia (swamp fever).

On August 14, the Ministers of Agriculture and Health announced the suspension, effective January 1, 1973, of the use of DES (diethylstilbestrol) to promote growth in livestock, after studying a report from an advisory committee of non-governmental experts which indicated that, although there is no evidence that DES has harmed the health of Canadians, there is potential for harm. The suspension followed a phasing out of the use of the hormone announced by the US Department of Health, Education and Welfare on August 3. A final decision on the status of DES will be made after further experimentation.

Dairy producers in Alberta, Saskatchewan and Manitoba entered the Market Sharing Quota Program during the year, joining Prince Edward Island, Ontario and Quebec in the scheme. With the addition of these provinces, more than 95% of the milk and cream used in manufactured dairy products in Canada came under market-sharing quotas.

The Canada Sheep Marketing Council was formed by representatives of lamb, wool and sheep associations across Canada. The Council will provide co-ordination of marketing efforts to industry and will recommend changes to improve returns to sheep producers.

A calf, believed to be the first born in Canada following the transfer of a fertilized egg from one cow to another (ovum transfer), was born May 9 at the Agriculture Canada farm near Hull, Que. The donor cow and foster mother were Holsteins; the sire was an Aberdeen Angus.

The Canada Department of Agriculture won a major international award at the Fifth International Food Products Exhibition in Paris, France, for a new process for producing quick-frozen egg mélange. By this process droplets of pasteurized egg mélange are frozen in liquid nitrogen, resulting in a granular form called cryogran eggs that overcomes the problems of handling the conventional 40-lb. bulk lots.

11.2 Federal government services

The Canada Department of Agriculture dates from Confederation in 1867. It was established as an outgrowth of the Province of Canada's Bureau of Agriculture, which was set up in 1852. The Department's authority lies in the British North America Act, 1867, which states, in part, "in each province, the legislature may make laws in relation to agriculture in the province" and "the Parliament of Canada may from time to time make laws in relation to agriculture in all or any of the provinces; and any law of the legislature of a province relative to agriculture, shall have effect in and for the province as long and as far as it is not repugnant to any Act of the Parliament of Canada".

A Department of Agriculture with a Minister of Agriculture at its head was accordingly established as part of the Government of Canada, and departments of agriculture headed by provincial Ministers were also set up by the provincial governments. In the Yukon Territory and Northwest Territories, agriculture is of very minor importance.

11.2.1 Canada Department of Agriculture

Activities of the Canada Department of Agriculture (CDA) cover three broad areas: research, promotional and regulatory services, and assistance programs. Research aims at

solving practical farm problems by applying fundamental scientific research to all aspects of soil management, agricultural engineering, and crop and animal production. Promotional and regulatory services attempt to control and eradicate crop and livestock pests, and register chemicals and other materials used for these purposes. Also included are inspection and grading of agricultural products and the establishment of crop and livestock improvement policies. Assistance programs cover some of the sphere of price stability, emergency relief, crop insurance, compensation, and income security in the event of crop failure.

The Department has seven branches: Research, Production and Marketing, Health of Animals, Economics, Food Systems, Financial and Administration, and Personnel Administration. Its organization also includes the Canadian Grain Commission, Agricultural Stabilization Board, Agricultural Products Board, Crop Insurance Division and Prairie Farm Assistance Administration. In addition, there are a number of agencies that are independent of, but closely allied with, the Department and are responsible to the Minister of Agriculture. These include the Canadian Dairy Commission, the Canadian Livestock Feed Board, the Farm Credit Corporation and the National Farm Products Marketing Council.

The Research Branch is responsible for research on agricultural production problems although some phases of research are carried on by the Economics Branch, the Health of Animals Branch and the Grain Research Laboratory of the Canadian Grain Commission. The activities of the Branch are carried out at 25 Research Stations, 10 Experimental Farms, seven Research Institutes, two Research Services, and at a number of substations and project farms in all ten provinces. General direction and co-ordination of the program are provided by headquarters of the Branch, located in Ottawa. Approximately 800 professional staff are employed, representing all the biological and physical sciences that contribute to the solution of agricultural production problems.

The total program of the Branch is problem-oriented, with specific objectives and goals for the Branch as a whole and relevant objectives and goals for each establishment. With the increasing complexity of modern agricultural production and the competitive pressures that exist, efficiency and reduced cost per unit of production become increasingly important. Therefore, emphasis in the research program continues to be on development of improved varieties of plants and animals, on production practices that will maximize yields and reduce costs, and on methods of controlling insects, diseases and weeds that lower production.

Through the years, Research Branch scientists have produced new varieties of cereal, forage and horticultural crops to meet new market requirements and reduce the hazards of production. The search continues for even better material to overcome the limiting factors of a northern climate including a short growing season, frost hazards, drought, insect pests and diseases. At the same time, efforts are being made to develop plants that will respond favourably to long days and the high light-intensity of many parts of Canada. As an aid in identifying the effects of climate on crops and providing a basis for forecasting the possibilities of success with new crops in a given area, agrometeorology has become increasingly important. Particular attention is focused on new crops and outstanding success has been achieved; a highlight is the development of new varieties of rapeseed with oil quality-tailored to specification. More than 80 new varieties of crops have been developed and put into commercial production in the past ten years, including almost all of the cereal crops produced in western Canada.

Feed grains and forage crops are receiving special attention for economical livestock production. The application of genetics to animal improvement and strengthening of the knowledge of the nutritional requirements of animals are the two main avenues being explored to improve livestock production. More recently, increasing emphasis has been placed on developing procedures to improve the reproductive efficiency of all classes of stock. Additional attention is also being given to the disposal of animal wastes, a problem that is increasing in severity as livestock concentrations become larger.

An aggressive battle is being fought to control crop diseases and pests. Although chemicals have proved to be a potent weapon, their contribution to the total pollution problem has caused particular concern and other methods of control are now receiving greater attention. The development of resistant varieties, the use of parasites, predators, insect pheromones, and radiation-induced sterility and the destruction of insects by non-chemical means are all in the arsenal of research workers. In this, as in most other aspects of agricultural research, the team or inter-disciplinary approach is being used more and more.

Agriculture has made outstanding advances in the past quarter-century in increasing output per man. This has been made possible through farm mechanization on a large scale. To assist this advance, the Research Branch has expanded its agricultural engineering staff to deal with specific problems and to provide more liaison with universities and provincial extension officers. The Branch conducts a continuing soil survey in all provinces in co-operation with provincial departments of agriculture and with faculties of agriculture in universities; it also conducts an extensive program of research on soil fertility and cultural practices, with a view to using agricultural soils most effectively and conserving them for the future.

In addition to research done by Branch staff, considerable co-operative work is undertaken with staff of university faculties and provincial governments. Through operating and extramural grants, support is given to research workers at universities. Close liaison is maintained with these agencies to avoid unnecessary duplication of programs and special attention is given to maintaining contact with provincial extension officers. Branch establishments across the country are represented on provincial committees concerned with making recommendations on crop varieties, fertilizers, cultural practices, pest control, animal management, and other problems. Such collaboration ensures that research results are made available to extension officers and to producers as quickly as possible.

The Production and Marketing Branch conducts many of the promotional and regulatory functions of the Department. Six specialized divisions administer legislation and policies in the production and marketing of livestock, poultry, fruits and vegetables, dairy and plant products, and policies concerned with the control of disease in plants.

The Livestock Division administers legislation dealing with the grading of meat, wool and fur, with the registration of livestock pedigrees, with performance testing of cattle and hogs and with the supervision of race-track betting. Other activities include the promotion of livestock improvement and the compilation of market statistics. The Poultry Division carries out the policies of the national poultry breeding program, including Record of Performance for poultry, and hatchery inspection, as well as administering the regulations for the grading of poultry products. The Fruit and Vegetable Division administers legislation having to do with the grading of fruit and vegetables in both fresh and processed form, maple products and honey; it is also responsible for the licensing of interprovincial and international dealers and brokers who deal in fresh fruit and vegetables.

The Dairy Division administers legislation covering grades and standards for dairy products, including butter, cheese, concentrated milk products and ice cream. The Plant Products Division administers Acts and Regulations respecting seeds, feeds, fertilizers and pest-control products, conducts field inspections of seeds and maintains regional testing laboratories for agricultural product samples taken by Branch inspectors. The Plant Protection Division is responsible, under the Destructive Insect and Pest Act, for safeguarding against the introduction of serious plant insects or diseases into Canada or their spread in Canada, for certifying freedom from disease and pests in plant exports, and for seed potato certification. Other organizational units include the Grains Division, responsible for cereal grains and special crops, and the Marketing and Food Advisory services.

The Health of Animals Branch administers the Animal Contagious Diseases Act, the Meat Inspection Act and the Humane Slaughter of Food Animals Act, and operates laboratories for the study of animal diseases. It is composed of four Divisions: Contagious Diseases, Meat Inspection, Animal Pathology, and Education and Development. The Contagious Diseases Division controls contagious diseases of animals through preventive measures of inspection and quarantine of imported livestock and restricted commodities such as meat, farm products and other possible sources of infection; through conducting disease eradication programs, notably of bovine tuberculosis, brucellosis and Johne's disease; through the control and eradication of serious animal diseases, such as Newcastle disease, hog cholera, rabies and anthrax when outbreaks occur; and through inspection and certification as to health of livestock for export. The Meat Inspection Division conducts antemortem examinations; ensures the application of strict humane slaughter regulations for all food animals; conducts continuous postmortem examinations of animals slaughtered at packing plants operating under the Meat Inspection Act; and ensures maintenance of sanitary standards during processing of the products, accurate labelling, and the proper kind and use of ingredients and preservatives, in order that only wholesome, unadulterated meats and meat food products will be marketed.

The Animal Pathology Division consists of the Animal Diseases Research Institute at Hull, Que., the Animal Diseases Research Institute (Western) at Lethbridge, Alta., and seven other laboratories which conduct research and investigations on diseases of animals. The Division produces the biological products required in the control programs of the Branch; provides diagnostic services for diseases of domestic and wild animals; offers a consultation service regarding veterinary biologics and other agents used in the control of animal diseases; and assists in training departmental officers and technicians, as well as veterinarians from other lands. The Education and Development Division provides comprehensive training programs to meet the technical and scientific needs of the Branch and sponsors the attendance of its officers on other courses, and is involved in recruitment and liaison with other educational and professional institutions and organizations.

The Economics Branch furnishes the social science component, primarily economics, essential for the provision of comprehensive policies and programs to develop the agriculture and food sector of the Canadian economy. The Branch provides economic analysis and consulting services for the Minister, the Department and federal agencies. It conducts economic research, projects trends and prospects for agriculture, disseminates economic information, analyzes policy proposals, and plans and operates national economic programs for agriculture.

The structure of the Economics Branch is as follows: the Director General and Branch Executive, the Program Coordination and Development Group, the Policy Advisory Group and five divisions. The Marketing and Trade Division is concerned with the efficiency and development of markets for Canadian farm products; it also advises on trade policies and problems and prepares agricultural economic outlook information. The Farm and Rural Development Division helps Canadian farmers maintain profitable operations, keeps in touch with the problems of rural communities and operates the Small Farm Development Program. CANFARM Division provides a national computerized farm accounting service. The Research Division investigates the economics of production, marketing and resource use in agriculture and forecasts economic trends. There is also an Administration Division. Four regional research offices serve the following areas: the Maritime Provinces, Quebec, the Prairie Provinces and British Columbia; the CANFARM offices are at Guelph.

The Food Systems Branch was established in late 1972 to develop market-oriented plans for various commodities through the planning, development and co-ordination of programs within the Canada Department of Agriculture and with other components of the food system. The Branch works with all segments of the food industry, including producers, processors and distributors. Its responsibilities include monitoring and assessing food systems programs.

Administration, liaison and information. The Financial and Administration Branch provides central advisory and specialized staff services for the financial and business management of the Department and advises the Senior Executive in developing financial and administrative policies and programs. Personnel policies and programs for approximately 10,000 employees of the Department, including scientific and professional groups, technical, administrative and other support staff at various locations across Canada, are conducted by the Personnel Administration Branch.

The International Liaison Service, established in 1969, is the Department's "foreign affairs" arm. It maintains liaison on behalf of the Department with international agencies such as the Food and Agriculture Organization, the Organization for Economic Co-operation and Development and the World Food Programme. The Service co-ordinates departmental participation in these organizations, and in aid and development programs undertaken by the Canadian International Development Agency, the International Development Research Centre and international foundations. It also reports regularly on agriculture policy trends abroad and evaluates the impact of these changes on Canadian agriculture and trade.

The Information Division gathers and disseminates information on the research, development and regulatory work of the Department, giving service to the news media, to agricultural extension workers and directly to the public through publications, press and radio releases, television material, motion pictures and exhibits.

11.2.2 Farm assistance programs

Basic to the concept of Canada's national agricultural policy is the premise that a stable agriculture is in the interests of the national economy and that farmers as a group are entitled

to a fair share of the national income. Consequently, the Canada Department of Agriculture has carried on long-term programs designed to aid agriculture through the application of scientific research and the encouragement of improved methods of production and marketing. Over the years, as conditions have warranted, programs have been initiated to deal with special situations such as mitigating the effects of crop failure, assisting the movement of western feed grains to eastern Canada and British Columbia, reclaiming soil in the Maritime Provinces and combating drought in the agricultural areas of Manitoba, Saskatchewan and Alberta.

Although much has been accomplished and is still being accomplished by these measures, changes in the past two decades have dictated the need for a different approach to some problems. Large-scale mechanization and, in some segments of the industry, automation, have reduced manpower requirements very significantly; the number of farms has declined but the size of farms has increased; marketing and income problems have taken different forms; and a decline in some rural communities has occurred together with problems of increasing regional disparity. Legislation enacted to meet these situations includes price support (Agricultural Stabilization Act), dairy market and producer income stabilization (Canadian Dairy Commission Act), crop insurance (Crop Insurance Act), feed grain assistance (Livestock Feed Assistance Act), credit facilities (Farm Credit Act, Farm Syndicates Credit Act, Farm Improvement Loans Act), marketing assistance (Canada Grain Act, Agricultural Products Board Act, National Farm Products Marketing Council) and other forms of assistance to meet emergency or long-term conditions (Prairie Farm Assistance Act, Prairie Grain Advance Payments Act, Agricultural and Rural Development Act and Prairie Farm Rehabilitation Act). All these measures are administered by the Canada Department of Agriculture or by organizations responsible to the Minister except the Farm Improvement Loans Act (Department of Finance), Prairie Grain Advance Payments Act (Department of Industry, Trade and Commerce) and the ARDA and PFRA programs (Department of Regional Economic Expansion).

The Canadian Grain Commission was established in 1971 under the Canada Grain Act replacing the former Board of Grain Commissioners for Canada. For more detailed information on this Commission see Section 11.8.1.2.

The Agricultural Stabilization Board, established in 1958 by the Agricultural Stabilization Act which at the same time repealed the Agricultural Prices Support Act, 1944, is empowered to stabilize the prices of agricultural products in order to assist the agricultural industry in realizing fair returns for labour and investment, and to maintain a fair relationship between prices received by farmers and the costs of goods and services that they buy.

The Act provides that, for each production year, the Board must support, at not less than 80% of the previous ten-year average market or base price, the prices of nine commodities: cattle, hogs and sheep; butter, cheese and eggs; and wheat, oats and barley produced outside the prairie areas as defined in the Canadian Wheat Board Act. Other commodities may be supported at such percentage of the base price as may be approved by the Governor in Council. Since the Act came into force, the following farm products, other than the nine named commodities, have been supported at one time or another: honey, potatoes, soybeans, sunflower seeds, sugar beets, apples, peaches, wool, fowl, blueberries, rutabagas, carrots, sour cherries, raspberries, asparagus, tomatoes, milk for manufacturing, casein, cream, fluid milk, fluid cream, and skim milk powder. The Board may stabilize the price of any product by an offer-to-purchase, by a deficiency payment, or by making such payment for the benefit of producers as may be authorized.

In stabilizing prices of certain commodities by means of assistance payments, the price stabilization program has been assisting the agricultural industry to make production adjustments from a position of excessive supply to one of more normal relationship between supply and demand. During the period of adjustment, the Board guarantees a minimum average return to producers for their product on a national average basis.

The cost of stabilization programs under the Act has averaged approximately \$85.5 million a year. The Board has available a revolving fund of \$250 million, according to the Act; losses incurred are made up by Parliamentary appropriations and any surplus is paid back to the Consolidated Revenue Fund. An advisory committee named by the Minister of Agriculture and composed of farmers or representatives of farm organizations assists the Board in its operations.

The Agricultural Products Board was established in 1951 to administer contracts with other countries for the purchase or sale of agricultural products and to perform other commodity operations as Canadian needs may dictate. The Board's recent activities have included the purchasing of surplus Canadian commodities such as eggs and turkeys, with resulting improvement in producer prices, to be processed, packaged and delivered to the World Food Programme as part of Canada's commitment to that organization.

The Crop Insurance Act was passed in 1959 (RSC 1970, c.C-36) to assist in making the benefits of insurance protection on crops available in all provinces. This Act does not set up any specific insurance scheme but rather permits the federal government to assist the provinces to do so by making direct contributions toward the cost of providing crop insurance. The initiative for establishing schemes to meet their own regional requirements rests with the provinces. Schemes may be organized on the basis of specific crops or areas within the provinces and agreements between the provinces and the federal government set out the terms of insurance coverage.

Under the Act and amendments of 1964, 1966 and 1971, the federal government will pay 50% of the administrative costs incurred by a province and 25% of the amount of premiums required to make the scheme actuarially sound. In addition, the federal government may make loans to any province equal to 75% of the amount by which indemnities required to be paid under policies of insurance exceed the aggregate of the premium receipts for that year, the reserve for the payment of indemnities, and \$200,000. As an alternative to such loans, the federal government may re-insure a major portion of the provincial risk in a program operated under the Crop Insurance Act. Farmers insured under the Act are not eligible for payments under the Prairie Farm Assistance Act, nor are they required to pay the 1% levy on grain sales as provided for under that Act.

In the year ended March 31, 1972, 46,325 farmers purchased insurance worth \$131.5 million under 89 different crop insurance plans. Premiums charged totalled \$9.7 million (including the federal share) and indemnities paid out were approximately \$7.8 million compared with \$6.8 million in 1970. The number of farmers who purchased crop insurance in 1971 was 13% less than in 1970, but the insurance coverage was 12% more than in 1970. The main reduction in numbers of participating farmers occurred in Alberta, Saskatchewan and Quebec. The wheat inventory reduction program instituted in 1970 carried through to 1971 with the introduction of the Grassland Incentive Program and this may account for decreases in farmer participation in Alberta and Saskatchewan where wheat is the main crop; participation was lower in Quebec because of administrative difficulties. In 1971, crops were generally average across Canada. Major crop losses occurred in specific areas of Canada due to a variety of causes, such as fruit-set failure in apples in the Okanagan Valley of British Columbia, hailstorms and excess moisture during the harvest period in the prairie grain area, excess moisture during harvest in Ontario, mid-season drought in Quebec, and a late spring and wind and rain during August from Hurricane Beth in Nova Scotia and Prince Edward Island.

The Prairie Farm Assistance Act, 1939 (RSC 1970, c.P-16) provides for direct cash payments by the federal government on an acreage-and-yield basis to farmers in areas of low crop yield in the Prairie Provinces and in the Peace River area of British Columbia. Its purpose is to assist in dealing with a relief problem that faces municipalities when widespread crop disasters reduce crop yields over a large area. The per-acre payments are intended to assist farmers to seed a crop in the following year. Payments for the year ended March 31, 1972 totalled nearly \$5 million.

Payments are made from the Prairie Farm Emergency Fund to which farmers contribute 1% of the value of all sales of wheat, oats, barley, rye, flaxseed and rapeseed. In the period 1939 to 1972, receipts from the levy totalled \$215.6 million while payments to farmers were \$393.2 million. The additional funds required were provided from the federal treasury. Since August 1, 1971 the 1% levy on grain sales has been discontinued by authority of the Governor in Council as part of the progressive phase out of this program. The balance in the Prairie Farm Emergency Fund at April 1, 1972 was \$14.4 million.

Farmers operating land in the spring wheat area, and not covered by a federal-provincial crop insurance scheme, are eligible for awards. Crop failure and natural causes preventing seeding and summerfallowing are taken into account in making awards. These may not exceed

\$800 in respect of any one farmer's total cultivated acreage.

The Prairie Farm Assistance Administration was responsible for making payments under the Grassland Incentive Program in 1971-72. This is a forage program offering an incentive of \$10 per acre to farmers who change their farm production from grains, oilseeds and other crops to perennial forage. Payments made to farmers under the program to March 31, 1972 amounted to \$9.8 million. In addition, the Prairie Farm Assistance Administration made payments to farmers of approximately \$5.4 million in 1971-72 under the Operation LIFT program of 1970. Total payments under the LIFT program amounted to \$63.3 million as at March 31, 1972.

The Canadian Dairy Commission was established by the Canadian Dairy Commission Act and became operative on April 1, 1967. The affairs of the Commission are directed by three Commissioners, and its objects are "to provide efficient producers of milk and cream with the opportunity of obtaining a fair return for their labour and investment and to provide consumers of dairy products with a continuous and adequate supply of dairy products of high quality".

To perform its functions, the Commission is authorized to stabilize prices of major dairy products through offers to purchase at fixed prices, thus establishing stable prices in the interests of both producers and consumers. The Commission may borrow from the Minister of Finance the funds required for such purchases to a maximum of \$100 million, which must be repaid.

The Commission administers the payment of funds provided by the government for subsidies to producers of milk and cream used in the production of dairy products. These payments supplement returns to producers from the market and permit market prices to be kept at reasonable levels. Each producer is given a quota for the amount for which he is eligible for subsidy. The Commission, indirectly, pools returns to producers from products sold on the domestic and export markets through an export equalization fund. Money for this is collected by levies from producers in provinces under the Market Sharing Quota Program — Prince Edward Island, Quebec, Ontario, Manitoba, Saskatchewan and Alberta — and remitted to the Commission; in other provinces the money is collected by means of a holdback from subsidy payments. The funds are used to equalize export prices with domestic prices, for any surplus products that must be exported below domestic prices. Further details on the activities of the Commission with regard to marketing may be found in Section 11.8.2.2.

The Livestock Feed Assistance Act established the Canadian Livestock Feed Board, which is a Crown agency reporting to Parliament through the Minister of Agriculture. The Board has four main objectives: to ensure that feed grain is available to meet the needs of livestock feeders; that adequate storage space in eastern Canada is available for feed grain to meet the needs of livestock feeders; that the price of feed grain in eastern Canada and in British Columbia remains reasonably stable; and that there be fair equalization of feed grain prices in eastern Canada and in British Columbia.

To these ends, the Board may make payments related to the cost of feed grain storage and transportation. Feed grain transportation assistance payments have been made since 1941; since April 1967 they have been made under the authority of the Livestock Feed Assistance Act. Under the Feed Grain Assistance Regulations of the Appropriations Act, the original policy was initiated in October 1941 to provide a market for western feed grains, and to enable livestock feeders in eastern Canada and British Columbia to obtain supplies of feed grains at a cost that would maintain livestock and poultry production at a high level. This program has been modified over the years to encourage better utilization of both transport and storage facilities.

In the year ended March 31, 1972, more than 2.9 million tons of feed grain were shipped at a cost of \$20.2 million. Barley shipments made up more than 30% of the total, followed by western wheat and sample feed grains which accounted for 27%, oats nearly 20% and mill feeds about 15%. Small quantities of rye, western corn, screenings, and eastern corn and wheat made up the remainder. About half the shipments of each of the major grains went to Quebec, followed in order by Ontario, British Columbia and Nova Scotia.

The Farm Credit Corporation was established in 1959 as successor to the Canadian Farm Loan Board set up in 1929. The Corporation, which is a Crown agency, reports to Parliament through the Minister of Agriculture.

Two types of long-term mortgage loans are available under the Farm Credit Act. Under Part II, loans may be made up to 75% of the appraised farm value not exceeding \$100,000 for any farmer alone or jointly with others in a single farming business. Under Part III, supervised loans may be made to young farmers up to 75% of the appraised value of land and chattels, not exceeding \$100,000 for any farmer alone or jointly with others in a single farming business; special provision is made under this Part for loans up to 90% of farm assets where the owner-operator is under 35 years of age and management will be considerably above average. Under both Parts, applicants must be principally occupied in farming and be of legal age to enter into a mortgage agreement. Individual applicants under Part III must be less than 45 years of age. Loans may be made only to Canadian citizens or those with landed immigrant status. The interest rate is set by Order in Council and varies with the cost of money to the Corporation. The repayment period for both Parts is up to 30 years.

The Corporation has 115 field offices at which are based 191 credit advisers responsible for informing local farmers about the services available, for pre-loan counselling on credit use, farm planning and farm management, for accepting applications and for making farm appraisals.

In addition to the amounts repaid by borrowers, funds for lending to farmers may be borrowed by the Corporation from the Minister of Finance. The aggregate amount of such borrowings outstanding at any time may not exceed 25 times the capital of the Corporation. This capital was raised by amendment to the Act in 1972 from \$56 million to \$66 million. There were 68,930 loans to the amount of \$1,200 million outstanding as at March 31, 1972. During the 1971-72 fiscal year the Corporation approved 4,035 loans for \$114.7 million.

The Farm Syndicates Credit Act authorizes the Farm Credit Corporation to lend to qualified groups of farmers (referred to as syndicates). A syndicate is a group of three or more farmers, the majority of whom have farming as their principal occupation, who have signed an agreement acceptable to the Corporation with respect to the joint purchase and use of machinery, equipment or buildings which can be used profitably by them in their farming operations. Co-operative farm associations and certain farming corporations may qualify as syndicates for loans without the members entering into a formal agreement.

A syndicate may borrow up to 80% of the cost of machinery, buildings (including site and other improvements) and installed equipment suitable for joint use, to a maximum of \$15,000 per member or \$100,000, whichever is the lesser. Loans are repayable over a period not exceeding 15 years for buildings and installed equipment, and seven years for mobile machinery. The interest rate is based on the cost to the Corporation of funds advanced by the Minister of Finance, and its expenses in servicing loans. There is an initial charge of 1% on the amount of each loan. Security is provided by a promissory note signed by each syndicate member, and such other security as may be required. Up to March 31, 1972, the Corporation had approved loans for 730 syndicates totalling \$11.2 million. During the 1971-72 fiscal year the Corporation approved 134 loans for \$1.9 million.

The Small Farm Development Program, initiated by the Canada Department of Agriculture in 1971 with the establishment of a \$150 million fund to cover the first seven years of operation, is available to the provinces by agreement. It offers extended credit facilities to operators of small farms for the purchase of additional land or equipment to enable them to remain on the land and develop a profitable business; at the same time, the program benefits owners of small farms who choose to give up farming by allowing an adjustment grant in addition to the selling price of their land. Management and counselling services are also available.

The Land Transfer Plan of the Small Farm Development Program is administered by the Farm Credit Corporation acting as agent for the Canada Department of Agriculture. Under this Plan, special credit is made available for the purchase of land under agreement for sale. Unless the federal-provincial agreement specifies otherwise, the maximum permissible sale price is \$20,000, with a down payment as low as \$200 and a repayment period of not more than 26 years. The purchaser must be a Canadian citizen or landed immigrant who is the owner of a farm or has been a tenant for at least three years and whose principal occupation is the operation of that farm. He must have less than \$60,000 of assets and must buy from a vendor who is eligible for the assistance grant under the plan.

To be eligible for the grant, consisting of \$1,500 plus 10% of the sale price of the farm up to \$20,000 and not exceeding a maximum of \$3,500, a vendor must at the date of commencement

of the program be the owner of a small farm and be principally occupied in the operation of that farm. He must be able to support himself and his family at least as well after the sale as before, and he must sell all or substantially all of his land to a Canadian citizen or landed immigrant who will not operate the property as a separate uneconomic farm. The vendor is not eligible for a grant if the property sale price exceeds \$20,000 or such other maximum as may be established in the agreement with a particular province. Grants may be in cash or in the form of an annuity.

The Corporation maintains a listing service in its field offices to help bring sellers and buyers together. In special circumstances where no other purchaser is immediately available, the Corporation may purchase farm land for future resale at a price not exceeding 90% of the Corporation's estimate of its market value within the limits prescribed for the province where the property is situated. The seller will be eligible for a grant of \$1,500 plus 10% of the Corporation's estimate of the market value to a maximum of \$3,500.

The National Farm Products Marketing Council was established by the Farm Products Marketing Agencies Act to advise the Minister of Agriculture on all matters pertaining to the establishment of marketing agencies. It reviews their operations and assists them in promoting more effective marketing of farm products, and co-ordinates related activities of the provincial governments as well as the efforts of producers to establish marketing plans.

The Farm Improvement Loans Act (RSC 1970, c.F-3), administered by the Department of Finance, is designed to facilitate the availability of credit by way of loans made by the chartered banks and other lenders designated by the Minister of Finance to assist in almost every conceivable purchase or project for the improvement or development of a farm and includes the purchase of agricultural implements, the purchase of livestock, the purchase and installation of agricultural equipment or a farm electrical system, the erection or construction of fencing or works for drainage on a farm, and the construction, repair or alteration of farm buildings including the family dwelling, and the purchase of additional land for the purpose of farming. Credit is provided on security related to the purchase or project and on terms suited to the individual borrower.

The legislation, originally operative for three years (1945-48), has been continued by way of extensions, usually for three-year periods. The current extension is for the period July 1, 1971 to June 30, 1974. The maximum repayment period for land purchase is 15 years and for all other purposes ten years. The interest rate is prescribed in the regulations and is adjustable semi-annually on April 1 and October 1 of each year to reflect changes in the levels of interest rates generally. The borrower is required to provide from 10% to 25% of the cost of his purchase or project, depending on the loan category to which it belongs. The federal government guarantees each lender against loss sustained and an amount of up to 90% of the first \$125,000 lent, up to 50% of loans in excess of \$125,000 but not exceeding \$250,000, and up to 10% of loans in excess of \$250,000 made by that lender during a lending period. This guarantee does not apply to any loan made after the aggregate of all loans made by all banks in a given period reaches an amount fixed by statute. The current maximum stands at \$900 million which may be lent by the chartered banks and a limit of \$300 million which may be lent by other designated lenders. From inception of the program to December 31, 1971, 1.6 million loans amounting to about \$2.6 million were made. During the same period, payments were made to the banks under the guarantee provision in respect of 4,721 claims amounting to \$4.5 million, representing a loss ratio of less than one fifth of 1%. The maximum loan or amount that may be outstanding to a borrower at any one time is \$25,000.

The Prairie Grain Advance Payments Act, which came into force on November 25, 1957 (RSC 1970, c.P-18) and was amended in 1958, 1968, 1969 and 1971, provides for interest-free advance payments to producers in western Canada for farm-stored threshed grain (wheat, oats and barley). The rate of advance payment per bushel for wheat, oats and barley is prescribed by regulation each year. The rate approximates two thirds of the initial payment on the grade of each grain which it is estimated will be delivered in the greatest volume by producers to country elevators during the crop year. The maximum total advance is governed by quota levels also prescribed by regulation and may not exceed \$6,000 for any individual producer for the crop year. The rate of repayment is the same as the rate of advance. Repayment is effected by deducting approximately two thirds of the initial payment for wheat, oats and barley delivered subsequent to the loan until the producer has discharged his advance.

The Act also contains provisions for special advance payments covering unharvested grain and the drying of grain. The maximum total advances receivable for these special advances are \$3,000 and \$600, respectively.

11.3 Provincial government services

11.3.1 Departments of agriculture

Newfoundland. Government agricultural services in Newfoundland are operated by the Department of Forestry and Agriculture. The Agriculture Division consists of six directors and a staff of 125 under an Assistant Deputy Minister of Agriculture. For administrative purposes, the province is divided into a number of districts with an agricultural representative located in each. Specialists in charge of different phases of agricultural development visit each district on assignment from the St. John's office.

Departmental policies in support of the agricultural industry include: a bonus of \$125 per acre on land cleared by privately owned equipment; distribution of ground limestone at a subsidized rate; payment of bonuses on purebred sires; financial assistance to agricultural societies, marketing organizations, and exhibition committees; and grants in aid of constructing vegetable storage facilities.

Favourable marketing conditions and departmental assistance and loans under the provincial Farm Development Loan Board, the Newfoundland Marketing Board and the Newfoundland Farm Products Corporation have contributed to increased output of agricultural products in the province.

Prince Edward Island. The Prince Edward Island Department of Agriculture and Forestry is composed of the following branches and divisions: the Economics, Planning and Marketing Branch; the Agricultural Services Branch, which consists of the Farm Management Division, the District Agricultural Extension Division, the 4-H Division and the Home Economics Division; the Production Services Branch, which consists of the Soils and Crops Division and the Veterinary and Livestock Division; and the Forestry Branch, which consists of the Forest Nursery Division and the Bunbury Nursery Division. The latter is described in more detail in Chapter 10.

Nova Scotia. The Nova Scotia Department of Agriculture and Marketing directs the government's agricultural program by implementing provincial agricultural policies. The Department is administered by a Minister, Deputy Minister and branch directors concerned primarily with extension and economics, horticulture and biology, livestock services, market development, soils and crops, and formal agricultural education through the Nova Scotia Agricultural College located in Truro. The Department is particularly interested in encouraging rural people to help themselves through strengthening their interest in such organizations as the Nova Scotia Federation of Agriculture, the Nova Scotia Fruit Growers' Association and other commodity-oriented groups.

New Brunswick. Provincial government agricultural policy and programs in New Brunswick are administered and directed by the Department of Agriculture and Rural Development. Under the Minister of Agriculture and Rural Development, the Department is administered by a Deputy Minister, an Assistant Deputy Minister and the directors of branches concerned with: extension, livestock and dairying, veterinary services, poultry, plant industry, agricultural engineering, home economics, credit unions and co-operatives, and rural development. The Department also has a Farm Economics Division and an Information Division, as well as a Farm Adjustment Board, a Dairy Products Commission and a Forest Products Commission.

Quebec. The aim of the Quebec Department of Agriculture and Colonization is to promote agricultural development by making the best possible use of the province's resources through methods and techniques most appropriate to achieving its real and projected needs. Programs and regulations are constantly updated to meet changing situations and the modernization of agriculture is of particular concern.

The Department is headed by the Minister who is also responsible for the Quebec Sugar Refinery, the Farm Credit Bureau, the Agricultural Marketing Authority and the Crop Insurance Administration, each of which is operated by an autonomous board of directors. Under the general direction of the Minister, the Deputy Minister is responsible for

administration of the Department, for policy co-ordination and for the execution of programs established under these policies. Three Assistant Deputy Ministers are responsible for the principal Branches of the organization: Production; Research, Education and Administration; and Marketing.

The Production Branch is the largest in the Department; its major services and divisions are made directly available to the farmer. The Branch is responsible for veterinary services, animal husbandry, regional offices and laboratories, special projects, engineering and plant products. Veterinary services include work in the health of animals field, meat inspection and the provincial laboratories at Quebec and St-Hyacinthe as well as the veterinary medicines distribution centre at St-Hyacinthe; this service is also responsible for the sanitary inspection of meats in slaughterhouses and meat packing or processing plants operating under the "Quebec Approved" program. The animal husbandry section includes work in artificial insemination and animal diseases. The engineering section covers agricultural machinery, mechanized operations, farm buildings and agricultural water services. The plant production section covers field crops, horticulture, damage to uninsured crops, and the soils and plant husbandry laboratory. Agricultural extension and young farmers' programs are administered by the regional offices and laboratories of the Production Branch which are also charged with the operation of joint programs.

Through the Research, Education and Administration Branch, the Department carries out practical research directly applicable to agriculture at the farm level, pursues an agricultural education program, and provides for efficient administration of the budget.

Research and education cover crop protection, soils, apiculture and maple products, research stations and the La Pocatière and St-Hyacinthe institutes of agricultural technology. The Assistant Deputy Minister in charge of the Branch is the president of the Quebec Research Council, the co-ordination and promotion centre for most of the agricultural research carried out in Quebec. The Council directs research into specific fields to meet the special needs of Quebec agriculture. It maintains close liaison with federal government research organizations, and in drawing up its priorities also consults with the Quebec Plant Products Board and the Quebec Animal Production Board.

The administrative and financial services attached to this Branch include archives, land grants, travelling expenses, supplies, and grants and awards. The personnel section which makes up the rest of the Branch includes farm labour and civil defence.

The Marketing Branch, through the dual nature of its services and divisions, serves both agriculture and the consumer. The marketing aspect of the Branch includes economic studies (production, distribution, compilation and forecasts), marketing of agricultural products (publicity and search for markets) and technical assistance to the food industry (industrial development and business organization). Apart from its marketing role, the Branch includes those services and divisions responsible for control of dairy and meat products, supervision of warranties, prevention and elimination of fraud through quality control, and the chemical foods laboratory.

Ontario. The Ontario Ministry of Agriculture and Food conducts a wide variety of programs to develop a sound agricultural industry and to help farmers. Most assistance is through self-help programs which benefit the individual farmer. The Ministry administers 48 separate legislative Acts, some of which are regulatory, on an industry-wide basis. The Ministry has 54 county and district offices located throughout the province.

Under the Federal-Provincial Rural Development Agreement, 1970-75, the province shares equally with the Government of Canada the cost of certain rural development programs. In Ontario, ARDA is heavily committed to programs in farm enlargement and adjustment, rural resource development and assistance to rural industries to increase employment opportunities for rural people.

Agricultural Manpower Services assists in recruiting, moving and placing farm workers during the planting and harvesting seasons. This service operates under a provincial agricultural manpower agreement negotiated each year by the federal and provincial governments.

The Co-operative Loans Board makes loans to agricultural co-operative associations for the construction of cold storages, feed mills, processing plants, grain elevators, potato storages, dairies, creameries and cheese factories.

The Crop Insurance Commission of Ontario, a Branch of the Ministry, provides insurance against weather, insect and disease damage to winter wheat, spring grain, forage crops, grain corn, soybeans and white beans. The cost of administration is shared equally by the federal and Ontario governments and the premium rates are further subsidized to the extent of 25% by the federal government and 25% by the Ontario government.

The Soils and Crops Branch conducts programs of applied research to provide farmers with specific recommendations for their areas. Soils and crops specialists frequently work with local branches of the Ontario Soil and Crop Improvement Association to relay this information to the farmers. Specialists also supervise county inspectors who enforce the Weed Control Act and provide specialized advice to producers of horticultural crops in Ontario.

The programs of the Veterinary Services Branch fall into the categories of service and regulation and are administered by three sections: the laboratory section, through six veterinary services laboratories, provides diagnostic, investigational, consultation and extension services to veterinarians and livestock and poultry producers, and also administers the Fur Farms Act; the meat inspection section administers the Meat Inspection Act which provides for meat inspection in slaughtering plants in Ontario that are not under federal inspection; and the regulatory and communicable diseases section administers the following Acts, policies and programs concerned with disease control, animal care and animal health extension: the Brucellosis Act, the Pregnant Mare Urine Farms Act, the Riding Horse Establishments Act, the Livestock Community Sales Act, the Dead Animal Disposal Act, the Animals for Research Act, Veterinary Assistance Policy for Designated Areas, Certified Herd Policy for Swine, Rabies Indemnification Program, Cattle and Swine Health Programs, Veterinary Extension, and Disease Reporting Programs.

The Live Stock Branch supervises numerous livestock improvement programs, and administers the Artificial Insemination Act, the Beef Cattle Marketing Act, the Dog Licensing and Live Stock and Poultry Protection Act, the Hunter Damage Compensation Act, the Live Stock Branding Act, the Protection of Cattle Act, the Provincial Auctioneers Act, and the Warble Fly Control Act. Livestock improvement programs include dairy herd improvement; beef cattle, sheep and swine performance testing; bull and ram premium policies; the federal-provincial sheep transportation assistance policy; and northern Ontario livestock assistance. The Branch makes grants available to regional livestock clubs that hold sales and livestock shows, and sponsors exhibits of livestock outside the province. A staff of livestock specialists is available to provide feeding and management advice to livestock producers.

The Ontario Stock Yards Board, which operates under the federal Livestock and Livestock Products Act, was established to provide a marketing service for Ontario livestock producers and to protect their bargaining power.

The Ontario Milk Commission, a Branch of the Ministry, is responsible for dairy programs. Under the Milk Act, and through the Ontario Milk Marketing Board and the Ontario Cream Producers' Marketing Board, the Commission is responsible for all producer-marketing of milk and cream in the province. The Ontario Milk Marketing Board directs milk from farm to plant and establishes prices. The Commission administers the Farm Products Payments Act, the Oleomargarine Act, and the Edible Oil Products Act. It also carries out the milk quality program, audits plant records, and supervises the fluid milk, milk products and central milk testing programs. The Infra Red Milk Analyzer (IRMA) is the recognized method for determining milk fat content in Ontario. The Commission licenses processors and distributors, carries on extension work with producers, operates milk-testing laboratories for the purpose of calculating producer returns, certifies butter and cheese makers, graders and testers, and does inspection work on farm and in plant.

The Farm Products Inspection Branch promotes improved methods of disease control, grading, packaging, marketing, handling, storing and transporting Ontario farm produce. This is provided for under the Farm Products Grades and Sales Act and Regulations, the Plant Diseases Act, the Containers Act, the Abandoned Orchards Act, and the Seed Potatoes Act. Under the Ontario Farm Products Marketing Board, a branch of the Ministry of Agriculture and Food, 18 producer boards market 37 commodities with a total market value of approximately \$500 million annually.

The Ontario Food Council Branch has the broad responsibility of finding methods to better co-ordinate marketing of Ontario farm products in Ontario, other Canadian provinces and abroad. The Council includes representatives of producers, processors, wholesalers,

distributors and consumers. Market development, import replacement, and expansion of food information and consumer affairs services are major areas of the Council's work. The Ontario Food Terminal, operating under the Ontario Food Terminal Act, offers farmers the services of one of the largest volume wholesale fruit and vegetable markets in Canada.

Research and education are administered by the Education and Research Division. Under the Division, the Agricultural Research Institute of Ontario recommends and co-ordinates research for the betterment of agriculture, veterinary medicine and household science, undertakes continuous research on crops, livestock and farming practices, and administers a number of services. Horticultural research is co-ordinated by the Horticultural Research Institute of Ontario, which also operates under the Education and Research Division. Fruit and vegetable product development research, and fruit and vegetable variety research are the chief functions of the Institute. The Provincial Pesticide Residue Testing Laboratory tests samples of animal, vegetable and mineral origin for herbicides, fungicides and insecticides. The Laboratory continually tests milk collected from Ontario farms for pesticide residues. The Division is also responsible for agricultural education (Section 11.3.2).

The Provincial Entomologist reports on insect control programs, as provided under the Plant Diseases and Abandoned Orchards Act, to determine pest control recommendations for Ontario crops. The Provincial Apiarist is responsible for reporting on the bee and honey industry.

The Extension Branch has personnel in each of the 54 county and district offices. Agricultural representatives relay information about agricultural research developments directly to farmers. In addition, specialists on farm management and engineering are located strategically throughout the province. The northern Ontario assistance policies of the Ministry, which vary from year to year, are also administered by the Branch. The Branch endorses and assists the 4-H Clubs and the Junior Farmers' Association of Ontario.

The Home Economics Branch conducts an extension program for rural women's groups and for girls' 4-H homemaking clubs. Programs deal with the study of foods, nutrition, clothing, textiles, home furnishings, home crafts and home management.

The Information Branch publishes and distributes several hundred publications on agriculture and food, home gardening and homemaking. News releases, radio tapes and television film clips are used to convey information to farmers on important changes in agriculture. The film library distributes more than 2,000 films annually to the public. This Branch co-ordinates a Ministry Market Information Service which provides up-to-date commodity quotations and farm weather reports to the media and individual producers on a daily basis using radio and audio-tape facilities.

The Agricultural and Horticultural Societies Branch advises and offers financial assistance to agricultural and horticultural societies and ploughmen's associations and administers the Drainage Act and the Tile Drainage Act, 1971.

The Economics Branch does research into marketing, policy, production, land use and dairying, and works with Statistics Canada to collect and publish statistics on farm production and marketing.

Manitoba. The Department of Agriculture serves Manitoba through four Divisions: Marketing and Production; Rural Development; Regional; and Administration and Program Services. Within these divisions the following branches carry out a wide range of services.

The Animal Industry Branch develops and administers policies that encourage the improvement and efficient production of different classes of livestock, including poultry; supervises the grading of cream and inspects dairy farms and dairy manufacturing plants; and administers, in co-operation with federal departments, several Acts intended to ensure a supply of quality products for consumer protection. The Soils and Crops Branch encourages the development, production and improvement of cereal, forage and special crops and horticulture and promotes proper land use through soil conservation programs; it also develops and administers policies that encourage good field crop husbandry, soil conservation, land development and weed control. The Economics Branch deals with educational and developmental programs in farm management and agricultural economics, and carries out special studies and supervises the new farm diversification program. The Marketing Branch carries out a market development, research and analysis function aimed at establishing long-term markets for agricultural products. Market intelligence and relevant information are

provided to the various branches of the Department, to producers and to agribusiness. The Veterinary Services Branch operates a diagnostic laboratory for animal diseases, administers the Veterinary Services District Act and the Veterinary Scholarship Fund Act, and works in close co-operation with practising veterinarians and the federal Health of Animals Branch in the control of livestock and poultry diseases.

The Technical Services Branch provides programs in agricultural engineering, entomology and beekeeping, and carries out a rural water service of technical assistance to rural residents installing modern farm water systems.

The Community and Family Programs Branch carries out educational and developmental programs in home economics, 4-H and youth, agricultural manpower, community affairs, rural counselling and resource analysis; it also administers the Agricultural Extension Centre at Brandon for adult education programs. The Communications Services provides a regular flow of press, radio and television services to all mass media outlets and produces and distributes over 300,000 booklets, leaflets and circulars each year. The Regional Division is made up of five regions containing 38 district offices, each staffed with agricultural representatives; district home economists are located at 15 of these locations. The major role of this Division is the extending of educational and advisory information in agriculture, homemaking and rural development to rural residents through meetings, field days, short courses and individual contact.

Saskatchewan. The Saskatchewan Department of Agriculture is composed of the following branches and services. The Agricultural Extension Branch, the main extension agency of the Department, has the primary objective of maintaining and increasing the over-all efficiency of agricultural production. It provides a basic extension program designed to ensure that the most modern farming techniques and the latest research findings are made available to farmers; provides leadership and general guidance in agricultural adjustment programs needed to bring about necessary social and economic progress; and co-ordinates and administers field programs and policies sponsored by other branches for the purpose of encouraging desirable adjustments in agricultural production and to cope with emergency situations. The Branch maintains close co-operation with other branches of the Department as well as with the University of Saskatchewan and the Canada Department of Agriculture in the three-way co-ordination of agencies known as the co-operative extension program.

The Production and Marketing Branch comprises three major Divisions: Animal Industry, Plant Industry and Veterinary. The first two provide specialist services to agricultural representatives and agriculture in field crops, weed and insect control, soil conservation, horticulture, apiculture, livestock and poultry, and administer related Acts and programs. The Veterinary Division administers the Veterinary Service District Act, the Diseases of Animals Act, and provides diagnostic laboratory services and co-operates with the federal government and local veterinarians in disease prevention and control.

The Conservation and Development Branch provides engineering services for flood control and water use projects and for irrigation development. It is responsible for construction of works for the Saskatchewan River Irrigation Project and does much of the development work for the community pastures.

The Lands Branch administers Crown land, except forest reserves and parks in settled areas, classifies it according to the use for which it is best suited and disposes of it through lease or sale. The Branch also secures land for land utilization projects, supervises new settlement projects, pays for clearing and breaking by farmers on provincial leases, operates provincial community pastures and operates training farms for people of Indian ancestry.

The Family Farm Improvement Branch gives farmers technical advice on farm buildings, farmstead planning, mechanization and materials handling. The Branch conducts research for farm water and sewage works, provides technical and financial assistance for their installation and administers the Agricultural Implements Act and the Pollution (by livestock) Control Act.

The Economics and Statistics Branch undertakes research and investigations required to formulate and evaluate policies and programs that will ensure a high level of growth and efficiency in Saskatchewan's agriculture; it collects, analyzes and distributes economic information. The Farm Management Division carries out an extension program in farm business management. Data on crop conditions, production, marketings and income are available from the Statistics Division.

Alberta. During the past year, the Alberta Department of Agriculture has been reorganized in line with a renewed emphasis on marketing expansion. The Department has seven divisions whose activities are co-ordinated by an executive committee made up of the seven division directors, the Deputy Minister, three Assistant Deputy Ministers and the director of administration. In addition, the Policy Formulation and Liaison Secretariat, through consultation with agribusiness, farm organizations, researchers, etc., advises the Department on requirements for future planning and policy.

The Marketing Division develops programs and policies that support all sectors of the marketing chain for Alberta's agricultural products. Within this Division there are four "action oriented" sections: the market development section emphasizes both export and domestic market expansion, and provides market information; the product development section encourages and supports the development of new foods manufactured from Alberta farm products; the commodities section works with producer commodity groups concerned with marketing; and the consumer marketing section provides consumer education programs primarily in the urban areas. A fifth section, known as market intelligence, supports the other four sections by providing statistical and analytical data on all segments of the Alberta food industry.

Two developmental divisions of the Alberta Department of Agriculture are responsible for policies and programs that will ensure the survival of the family farm and promote the interests of rural communities. The Extension Division co-ordinates the extension programs of every division of the Department. In association with other extension agencies, it leads in formulating and implementing district and regional programs for agriculture, family living and community development. It operates mainly through 57 district extension offices co-ordinated by six regional directors, complemented by an expanding staff of regional specialists in livestock, plant industry, engineering and home economics; leadership training is also provided. Within the Family Farm Division are several branches dealing with land management, engineering and home design, co-operative activities and credit unions, municipal relations and surface rights, as well as the Alberta Agricultural Development Corporation which guarantees or makes loans for the development of agricultural enterprises.

The Plant Industry Division administers programs and policies relating to crop improvement, crop protection and pest control, weeds, soils and fertilizers, horticulture, apiculture and special projects. It operates a crop clinic in Edmonton, a horticultural research centre at Brooks, and an extensive tree nursery at Oliver which supplies millions of trees yearly for farm planting and reforestation.

The Animal Industry Division administers legislation, policies and programs in the broad area of livestock, dairy and poultry production and in processing and marketing. Included are: setting standards for and approving public sales of sires, ROP programs for standards and qualifications for the artificial insemination (AI) industry; supervising feeder associations; brand registration and inspection; licensing of butchers, livestock dealers, stockyard and AI technicians; pound districts and sale of horned cattle. The testing, grading and purchasing of raw produce by all dairy plants are under regulation, as are standards of construction, manufacture, processing, sanitation and temperature control for dairy and frozen-food plants. A regular cow-testing service to provide the basis for breeding, feeding and culling dairy cattle is available to dairy producers, and chemical and bacteriological analyses are conducted for industrial directives. Licences are issued to poultry hatcheries, wholesalers, first receivers and truckers, and programs are conducted for control of pullorum-typhoid diseases of chicken- and turkey-hatching egg supply flocks. Extension programs, cost studies, disease tests and surveys, and research projects with respect to poultry, are also carried out.

The Veterinary Services Division provides diagnoses of livestock and poultry diseases and conducts investigations of disease conditions; provides lecture service for the University of Alberta and for other groups; promotes policies aimed at reducing losses such as vibriosis and mastitis control, stockyard inspection and swine health programs; administers regulations concerning live fur-bearing animals and pelts; and assists fur farmers in care, management and stock improvement.

The Irrigation Division provides professional and technical assistance to farmers in irrigation districts to encourage and ensure the economic viability of irrigated farm units by better conservation and management of the land, water, labour and capital resources

available; its functions also include recommending policies and implementation of programs related to over-all irrigation system improvement.

British Columbia. The Department of Agriculture comprises four Divisions: Administrative Services, Production Services, Special Services and General Services. Administrative Services is responsible for the direction of policies affecting farmers' institutes, grants, accounts, personnel and publications. Production Services includes the Apiary, Dairy, Field Crops, Horticulture, Livestock, Poultry, Farm Management and 4-H Club Branches, and district agriculturists. Special Services includes the Animal Pathology, Engineering, Entomology, Markets and Statistics, Soils, Veterinary and Plant Pathology Branches. The remainder — Agricultural and Rural Development Act (ARDA), Information Service, British Columbia Marketing Board, British Columbia Milk Board, Crop Insurance Branch and Institutional Farms — are grouped under General Services.

In addition to the headquarters staff at Victoria, the Department maintains 19 district offices in various parts of the province, as well as a veterinary laboratory and poultry-testing station at Abbotsford, a beef-testing station at Kamloops and dairy and entomology laboratories at Vancouver and Cloverdale, respectively; soil-testing facilities are installed at Kelowna.

11.3.2 Agricultural schools

All of the provinces of central and western Canada have agricultural colleges associated with universities giving courses leading to degrees in agricultural science and home economics and also providing postgraduate courses; the University of British Columbia has a faculty of Agricultural Sciences; Ontario, Quebec and Saskatchewan have veterinary colleges. In addition, all of these provinces have schools of agriculture or diploma courses offering basic training to young people intending to return to farms or interested in employment in businesses allied with agriculture.

In Alberta, these programs are offered at the vocational, technician and technologist levels by three agricultural and vocational colleges which also engage in applied agricultural research and offer programs in adult education and upgrading.

In Quebec, scientific education in agriculture is available at Université Laval and McGill University, and two institutes offer technical and technological courses in agriculture. Vocational education generally is the responsibility of the Department of Education.

The Education and Research Division of the Ontario Ministry of Agriculture and Food offers five diploma-course programs at the Ontario Agricultural College, University of Guelph, as well as at the Colleges of Agricultural Technology at Centralia, Kemptville, New Liskeard and Ridgeway.

In the Maritime Provinces, agricultural education is centred in the Nova Scotia Agricultural College at Truro, NS. This College provides the first two years of a BSc program in Agricultural Science (three years in Agricultural Engineering) with the final two years provided by other faculties in eastern Canada; in addition, the College offers a wide range of technical programs associated with farming and agribusiness and a variety of vocational courses designed to update farmers and other industry personnel.

11.4 Yearly statistics of agriculture

The collection, compilation and publication of statistics relating to agriculture is the responsibility of Statistics Canada. Valuable information is obtained through the censuses, through partial-coverage mailed questionnaire surveys and from the administrative records of government operations.

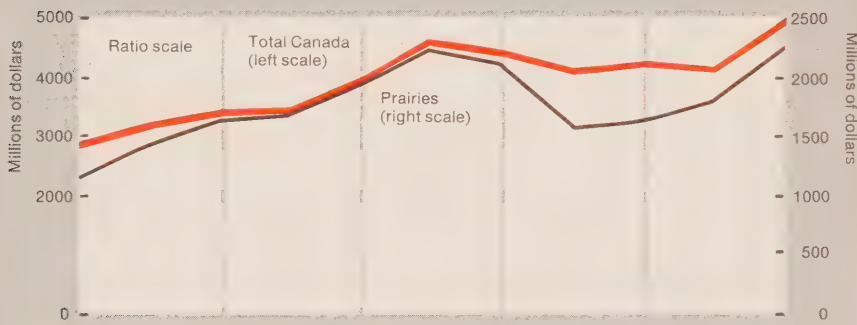
Statistics Canada collects and publishes primary and secondary statistics of agriculture on an annual and monthly basis. The primary statistics relate mainly to the reporting of crop conditions, crop and livestock estimates, wages of farm labour and prices received by farmers for their products. The secondary statistics relate to farm income and expenditure, per capita food consumption, marketing of grain and livestock, dairying, milling and sugar industries and cold storage holdings. In the collection of annual and monthly statistics, the Canada Department of Agriculture and various provincial departments, as well as such agencies as the Canadian Grain Commission and the Canadian Wheat Board, contribute statistical data and aid directly in Statistics Canada survey work. Many thousands of farmers throughout Canada send in reports voluntarily and dealers and processors also provide much valuable data. The

figures contained in this Section do not include estimates for Newfoundland; agriculture plays a relatively minor part in Newfoundland's economy and commercial production of most agricultural products is quite small. In the following Subsections, details are given for 1971 with earlier comparisons; figures for the latest year are subject to revision and it should be noted that many of those given for earlier years have been revised since the publication of the *1972 Canada Year Book*.

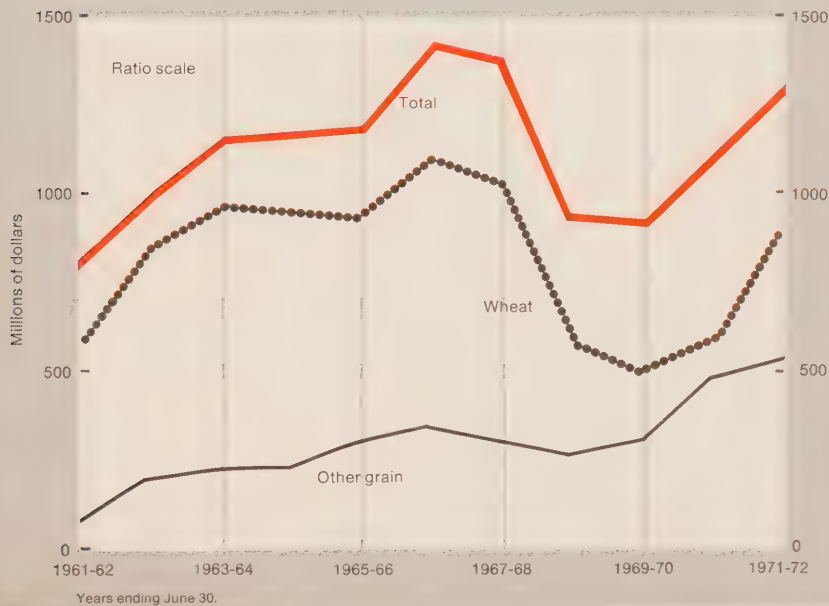
11.4.1 Farm income

Cash receipts from farming operations. Estimates of cash receipts from farming operations include data concerning cash receipts from the sale of farm products, Canadian Wheat Board participation payments on previous years' grain crops, net cash advances on farm-stored grains in western Canada, deficiency payments made by the Agricultural Stabilization Board, and supplementary payments. Farm cash receipts from the sale of farm products include the returns from all sales of agricultural products except those associated with direct inter-farm transfers. The prices used to value all products sold are prices to farmers at the farm level; they include any subsidies, bonuses and premiums that can be attributed to specific products but do

Total farm cash receipts



Farm cash receipts from grain



not include storage, transportation, processing and handling charges which are not actually received by farmers.

Total cash receipts from farming operations for 1971, excluding supplementary payments, are now estimated at \$4,494.9 million for Canada (excluding Newfoundland). This estimate is 8.6% above the revised value of \$4,139.0 million in 1970 and 5.4% above the average for the five-year period 1966-70 (Table 11.1). This increase in cash receipts can be attributed to increases in almost all cash receipts items with the more important exceptions of flaxseed, potatoes, tobacco, pigs and eggs (Table 11.2).

The largest increase in total cash receipts occurred in Saskatchewan which registered a rise of 31.4%. In Alberta the increase in total cash receipts amounted to 11.5% and in Manitoba a rise of 9.9% occurred. In contrast, Prince Edward Island, Nova Scotia and New Brunswick registered declines of 12.3%, 3.6% and 10.2%, respectively. Such decreases were caused mainly by lower cash receipts from potatoes and pigs.

In addition to the above income, farmers also received supplementary payments amounting to \$18.3 million during 1971, considerably below the \$58.2 million received in 1970 (Table 11.3). For both years, these payments included those made under the provisions of the Prairie Farm Assistance Act, which are made from the Prairie Farm Emergency Fund to which farmers contribute by means of a 1% levy on grain marketings, together with payments made under the Lower Inventory for Tomorrow (LIFT) program. In Manitoba, in 1971, they also included payments to farmers under the Farm Acreage Payment program. When added together, cash receipts from farming operations and supplementary payments totalled \$4,513.1 million, 7.5% above the estimate of \$4,197.2 million in 1970.

Farm net income. Two different estimates of farm net income from farming operations are prepared by Statistics Canada. Realized net income is obtained by adding together farm cash receipts from farming operations, supplementary payments and the value of income in kind, and deducting farm operating expenses and depreciation charges. This estimate of farm net income represents the amount of income from farming that operators have left for family living, personal taxes and investment after provision has been made for operating expenses and depreciation charges. The second estimate is referred to as total net income and is obtained by adjusting realized net income to take into account changes occurring in inventories of livestock and stocks of field crops on farms between the beginning and end of the year. This latter estimate is used in calculating the contribution of agriculture to the "income" component of the system of national accounts and for making comparisons with net income of non-farm business enterprises (Table 11.3).

Realized net income of farm operators from farming operations for the year 1971 is estimated at \$1,359.6 million. This is 12.5% above the revised 1970 value of \$1,209 million and 6.7% above the revised 1969 value of \$1,274 million. During 1971, increased cash receipts more than offset increased farm operating expenses and depreciation charges and decreased supplementary payments. The estimate of total farm net income takes into account changes in the value of farm-held inventories of field crops and livestock. In 1971, total farm net income amounted to \$1,593.5 million, 25% above the 1970 level of \$1,274.5 million and 1.9% above the 1969 value of \$1,564.3 million. Total operating expenses and depreciation charges during 1971 reached a level of \$3,660.7 million, 4.5% above the revised 1970 value of \$3,503.8 million.

11.4.2 Field crops

Canada's 1971 wheat crop, estimated at 529.6 million bu, was 60% above the 1970 crop of 331 million bu. The average yield per acre at 27.3 bu was 3% more than the 1970 yield of 26.6 bu. The average protein content of the 1971 crop of hard red spring wheat was 13.5% — higher than the 1970 level of 13.2% but still below the 13.9% in 1969.

Total supplies of Canadian feed grain (oats, barley, rye, corn, buckwheat and mixed grains) increased by 10% in 1971-72 compared with the previous year, due to higher levels in carryover stocks of rye combined with larger production of barley, corn and mixed grains. Total supplies of oats at 488.8 million bu were some 4% below the 509.2 million bu in 1970-71, while supplies of barley, reflecting a record production, amounted to an all-time high of 745.9 million bu and exceeded the previous year's high level of 615.8 million bu by 21%. The 1971 out-turn of mixed grains at 107.1 million bu also set a new record and surpassed the 1970 crop of 98.6 million bu by 9%. Record grain corn production, at 116 million bu, represented a 15% increase over the 1970 level of 100.9 million bu. Imports of corn in 1971-72, at about 11.7

million bu, were slightly below the 12.7 million bu of the previous year. Supplies of rye, at 34.7 million bu in 1971-72, were 5% above the 33.1 million bu in 1970-71. The out-turn of buckwheat declined by 15% from 2.8 million bu in 1970 to 2.4 million bu in 1971. The supply and disposition of the major Canadian grains are dealt with in Section 11.7.1.

Acreages, yields and prices of the principal field crops in the years 1968-71, with averages for 1963-67, are shown in Table 11.4; acreages, yields and values of field crops by province for 1970 and 1971, in Table 11.5; and acreages and production of grain in the Prairie Provinces for the years 1967-71 in Table 11.6. Table 11.7 shows the stocks of Canadian grain on hand in Canada and in the United States on July 31 for the years 1969-71, with averages for the ten-year period 1959-68.

11.4.3 Livestock and poultry

The 1971 Census of Agriculture reported 13.3 million head of cattle on farms in Canada, a 3% increase since the 1966 Census count of 12.9 million. Milk cows at 2.3 million (2 years and over) decreased by 16% over the same five-year period, continuing the trend toward reduced dairy numbers that began 20 years ago. Other cattle have shown an increase, however, reflecting the growing importance of beef production and, by 1971 Census count, these totalled 11 million head, up 8% since 1966 and 125% since the 1941 Census. Inspected slaughter of cattle in 1971, as reported by the Canada Department of Agriculture, amounted to 2.8 million, an increase of 3% from 1970, while 1971 calf slaughter at 464,240 decreased by 7% over the corresponding period, again underlining the increasing trend toward beef production as more calves are fed out and veal production consequently declines (Table 11.8).

Exports of cattle in 1971 were 245,221 head, down slightly from 247,029 in 1970. More than half of these animals (125,290) weighed less than 200 lb. and went to the United States. Imports at 90,707 head, (89,713 from the United States), were up by 74% and consisted largely of slaughter cattle going to eastern markets. Beef exports at 143 million lb. remained relatively constant but imports dropped 23% to 173 million lb. due to lower imports from Australia and New Zealand.

The Canada Department of Agriculture reported that the weighted average price of choice slaughter steers at Toronto for 1971 was \$34.30 compared to \$32.25 in 1970, and \$29.55 for the 1966-70 average.

The 1971 Census adjusted count for pigs at June 1, 1971 was 7.6 million, an increase of 41% over the 1966 count of 5.4 million and a record high. On the other hand, the number of farmers reporting pigs decreased 21%, from 154,328 in 1966 to 122,481 in 1971. Poor international grain markets coinciding with depressed prices for pigs resulted in farmers holding their pigs for finishing on their own grain stocks, mainly in the western provinces which were most affected by the poor grain market. Pigs slaughtered in federally inspected plants in 1971 numbered 9.7 million, as reported by the Canada Department of Agriculture, an increase of 18% over 1970 gradings. The increased gradings lowered prices and the weighted, average price at Toronto (\$ per 100 lb.) for index 100 pigs in 1971 was \$25.80 compared with \$32.20 in 1970 and \$35.70 in 1969.

The number of sheep and lambs on farms reported in the 1971 Census was 860,789, a decrease of 16% from the 1,019,997 reported in the 1966 Census, and the number of farmers reporting sheep was 14,090, down 34% from 21,453 over the same period. Inspected slaughter of sheep and lambs in 1971 was 205,082, up 13% from 1970. Imports of live animals also increased, from 28,121 in 1970 to 37,412 in 1971, with the increase due entirely to higher imports from the United States. Imports of mutton and lamb, on the other hand, decreased 25% to 52.8 million lb. in 1971.

Poultry on farms and their values in 1971-72 are given in Table 11.9; production and consumption of poultry meat are shown in Table 11.10.

11.4.4 Dairying

The number of dairy cattle on farms has been declining gradually for many years. Despite the over-all decrease in numbers, total milk production in Canada had remained fairly constant by an increase in output per cow until in 1971 when it declined 536 million lb. from the previous year (Table 11.11). Production is concentrated in central Canada, Quebec and Ontario accounting for about 73% of the total quantity.

Table 11.12 shows that the farm value of milk production in Canada for 1971 was \$768.5 million, an increase of approximately 3.5% over 1970. The value of milk used in factories in

1971 was \$390.5 million (62% of total production) and fluid milk sales amounted to \$329.3 million (30% of total production).

Production of creamery butter, which in 1971 amounted to 286.8 million lb. and required 38% of the total national milk output, represents a decline of 12.5% from the 1970 figure (Table 11.13). Quebec accounted for almost half of the total output, followed by Ontario with 28%. Per capita consumption, shown in Table 11.14, was 15.3 lb., slightly lower than in 1970.

Both output and consumption of cheese have been increasing gradually during the past few years. The total production of factory cheese (Table 11.13) for 1971 was 247.9 million lb. compared with 215.3 million lb. for 1970, and per capita consumption (Table 11.14) of all varieties of cheese, excluding cottage cheese, was 12.7 lb. compared with 11.8 lb. for 1970. Exports of cheese amounted to 32.8 million lb. in 1971, a decrease from 39.4 million lb. in 1970. Ontario accounted for 44% of the output and Quebec 49%.

Total production of concentrated whole milk products, which include condensed milk, evaporated milk, whole milk powder, partly-skimmed evaporated milk and others, increased over the previous year, with the exception of condensed milk which decreased slightly. Total production of concentrated milk by-products decreased due to a 16.9% drop in production of skim milk powder.

11.4.5 Fruit, vegetables and other farm products

Fruit. Commercial fruit growing in Canada is confined almost exclusively to rather limited areas in the provinces of Nova Scotia, New Brunswick, Quebec, Ontario and British Columbia. Nova Scotia production is centred mainly in the Annapolis Valley and New Brunswick production in the Saint John River Valley and Westmorland County. In Quebec the fruit growing districts are the Montreal area, the North Shore area, the Eastern Townships and the Quebec City district. Ontario fruit is grown in all the counties adjacent to the St. Lawrence River and the Great Lakes as far west as Georgian Bay; the Niagara district, however, is by far the most productive region. In British Columbia the four well-defined fruit areas are the Okanagan Valley, the Fraser Valley, the Kootenay and Arrow Lakes district and Vancouver Island. The climate elsewhere in Canada is not generally suitable for commercial tree-fruit culture. Apples and small fruits are produced commercially in the provinces named but tender tree fruits and commercial vineyards are largely limited to Ontario and British Columbia.

By far the most valuable fruit crop produced in Canada is apples and in 1971 the farm value for this crop was \$26.6 million. The main outlet for Canadian apples is the fresh market which absorbs about 63% of the production each year and the volume of apples for processing is about 37% of production. In Nova Scotia nearly 66% of the crop is processed but smaller proportions are processed in the other producing provinces.

Strawberries are grown commercially in all provinces for which tree-fruit statistics are prepared, as well as in Prince Edward Island, but are produced over a somewhat wider area than are tree fruits. Raspberries are grown commercially in Nova Scotia, New Brunswick and Quebec but the bulk of the crop is produced in Ontario and British Columbia. The Fraser Valley of British Columbia is the most important producing area. Wild blueberries are harvested on a commercial scale in Newfoundland, Prince Edward Island, Nova Scotia, New Brunswick and Quebec. This crop is indigenous to certain areas in these provinces and a large percentage of the crop is frozen and exported. There is also some production of cultivated blueberries, particularly in British Columbia.

A marketing system has been developed for distributing fresh fruit from the specialized production areas to all parts of the country and a large proportion of the deciduous fruit consumed in Canada is grown domestically. Considerable quantities of apples, strawberries and blueberries are exported. Canning and processing industries have developed in the fruit growing districts and, although the importance of the processing market varies with different fruits, it provides a valuable outlet for substantial proportions of most Canadian-grown fruit crops.

Table 11.15 shows the estimated commercial production of fruit, by kind, for 1969-71.

Vegetables. Estimates of acreage and production of commercial vegetables in Canada are prepared for all provinces except Newfoundland and Saskatchewan. Ontario is the largest producer, followed by Quebec and British Columbia. A wide variety of crops are grown in these three provinces and a somewhat smaller range in the Maritime Provinces, Manitoba and Alberta.

Canning, freezing and processing of vegetables are carried on in the important producing areas. The estimates in Table 11.16 cover output of commercial growers for processing and for sale on the fresh market but do not include averages or production of vegetables grown for home use.

Eggs. Table 11.17 shows production, utilization and value of farm eggs, by province. In 1971, egg production at 499.3 million doz was 0.7% higher than in 1970 and 11.4% higher than the record 448.2 million doz produced in 1959. The number of layers increased slightly in 1971 over 1970, the rate of lay per 100 layers rose to 20,902 from 20,888 and the farm selling price of eggs averaged 33.0 cents per doz compared with 35.4 cents. The Atlantic Provinces produced 7.7% of all eggs in 1971; Quebec, 16.0%; Ontario, 38.9%; the Prairie Provinces, 25.6%; and British Columbia, 11.8%.

Honey. As shown in Table 11.18, honey production in 1971 was below that in 1970. Honey is produced commercially in all provinces except Newfoundland and yields vary to some extent from year to year. Alberta is consistently the largest producer, accounting for almost 42% of the total output in 1971. Honey bees are kept in some fruit-growing districts for pollination purposes and are also used for pollination of certain seed crops. To facilitate storage, shipment and uniformity of quality, large quantities of Canadian honey are pasteurized. Beekeepers' marketing co-operatives are active in several provinces. In 1971, Canada exported 24.2 million lb. of honey valued at \$4.3 million, more than two and a half times the quantity exported in 1970. Exports went mainly to Britain, the United States, the Federal Republic of Germany, Japan and the Netherlands.

Sugar beets and beet sugar. Sugar beets are grown commercially in Quebec, Manitoba and Alberta and beet sugar factories are located in these provinces. In Quebec, commercial production is centred in the St-Hilaire area of the Eastern Townships; Alberta, where sugar beets are grown under irrigation, produces the largest crop. Acreage, yield and value of sugar beets for the years 1964-71 are shown in Table 11.19, together with quantity and value of shipments of beet sugar.

Maple sugar and maple syrup. Maple syrup is produced commercially in Nova Scotia, New Brunswick, Quebec and Ontario. The bulk of the crop comes from the Eastern Townships of Quebec, a district famous in both Canada and the United States as the centre of the maple products industry. Virtually all of the maple products exported go to the United States with the larger proportion moving as sugar, although substantial quantities of syrup are also shipped. Much of the syrup sold in Canada is marketed in one-gallon cans direct to the consumer from the producer but a considerable amount of both sugar and syrup is sold each year to processing firms. Production and value of maple sugar and maple syrup, by province, are shown in Table 11.20.

Greenhouse operations. The total area operated under glass in 1970 and 1971 by reporting firms, plus estimates for non-response in Essex county in Ontario, amounted to 25.4 million sq ft and 25.8 million sq ft, respectively, while the total value of growers' sales stood at \$55 million in 1970 and \$64.7 million in 1971. The results of this survey are published in Statistics Canada publication *Greenhouse industry* (Catalogue No. 22-202).

Nursery industry. An annual survey is made of the nursery industry; figures published are based on data reported by firms and individuals returning questionnaires. In 1971 the nursery trades industry had a total revenue of \$50 million. Approximately one third of this represents grower sales of traditional fruit and nursery stock and one third was earned by supplying the increasing demand for contracted services. The results of this survey are published in Statistics Canada publication *Survey of Canadian nursery trades industry* (Catalogue No. 22-203).

Tobacco. Canada produces several types of leaf tobacco but by far the most important is the flue-cured or Bright Virginia type. This is grown mainly in Ontario, along with considerable quantities of burley and smaller amounts of dark (air-cured and fire-cured) tobacco. Quebec produces smaller quantities of these types as well as some cigar and pipe tobacco, and small flue-cured acreages are also harvested in Prince Edward Island, Nova Scotia and New Brunswick. Although the total acreages planted were lower in 1971 than in 1970, the yields per acre in all producing areas were higher and total production increased from 221.9 million lb. in 1970 to 224.4 million lb. in 1971. The average value per lb. declined fractionally from 64.4 cents in 1970 to 64.1 cents in 1971 (Tables 11.21 and 11.22).

No information is available on the production of cigarettes for domestic consumption but, on the basis of domestic sales reported to Statistics Canada by manufacturers, the number of cigarettes sold rose from 46,582.2 million in 1969 to 49,822.5 million in 1970 and to 50,864.4 million in 1971.

Wool. Estimates of production of shorn wool in 1971 at 3.6 million lb. were 5% higher than in each of the previous three years. However, during the same period the price per lb. declined gradually from 47.8 cents to 31.2 cents and the total value from \$1.7 million to \$1.2 million, until 1971 when the price per lb. and total returns were sharply reduced by about 50% to 16.4 cents and \$598,000, respectively, due to discontinuance of payments under the Agricultural Stabilization Act. At the same time, over the four-year period apparent consumption of wool, about 90% of which is imported, decreased by 35% to 39.7 million lb.

11.4.6 Prices of agricultural products

The index of farm prices of agricultural products (Table 11.23) was designed to measure changes occurring in the average prices farmers receive at the farm from the sale of farm products. In comparing current index numbers with those prior to August 1971, the following points should be considered. Prices of all western grains used in the construction of the index prior to that date are final prices; all later figures are initial prices only for wheat, oats and barley. Any subsequent participation payments will be added to the prices currently used and the index revised upward accordingly. Average cash prices per bu of major Canadian grains are given in Table 11.24 and yearly average prices per 100 lb. of Canadian livestock in Table 11.25.

11.4.7 Food consumption

Food consumption figures represent available supplies, including production and imports, adjusted for change of stocks, exports, marketing losses and industrial uses. All calculations are made at the retail stage of distribution, except for meats for which the figures are worked out at the wholesale stage. The amount of food actually eaten would be somewhat lower than indicated because of losses and waste occurring after the products reach the hands of the consumer.

All basic foods are classified under 14 main commodity groups. The total for each group is computed using a common denominator for the group, for example: milk solids (dry weight) for the dairy products group; fat content for fats and oils; and fresh equivalent for fruits. All foods are included in their basic form, that is, as flour, fat, sugar, etc., rather than in more highly manufactured forms.

The series in Table 11.26 represents the official estimates of yearly supplies of food moving into consumption, expressed in pounds per capita, for the years 1965-69 as an average for comparison with the years 1970 and 1971. Production of meats from slaughter in Canada, total supply, distribution and per capita disappearance of meats and lard are shown in Table 11.27. All estimates are on a cold carcass-weight basis except canned meats, which are in terms of product.

11.5 1971 Census of Agriculture

This Section presents a limited amount of information from the 1971 Census of Agriculture; details are contained in Volume IV — Parts 1, 2 and 3 of the 1971 Census of Canada. A list of the special and advance census reports that have been released is available on request.

Number of census-farms. For both census years, 1971 and 1966, a census-farm was defined as a holding of one acre or more with sales of agricultural products valued at \$50 or more during the 12 months prior to the census. The number of census-farms in Canada declined 15% to 366,128 in 1971 from 430,522 in 1966, indicating an acceleration of the trend since 1941 toward an ever-decreasing number of census-farms (Table 11.28).

Farm areas. The total area of census-farms in 1971 was 169,668,614 acres, a 2.6% decrease from the 174,124,828 acres recorded in 1966 (Table 11.29). The Maritime Provinces, Quebec and Ontario all reported significant decreases in farm acreage. Only Newfoundland, Alberta and British Columbia showed an increase, the increase in Newfoundland being due to the establishment of new community pastures. The Yukon Territory and the Northwest Territories recorded a slight increase in acreage. For Canada, the 108,148,877 acres of

Number of census-farms



improved land for 1971 was virtually unchanged from the area recorded in 1966. A 4.3% increase in summerfallow to 26,740,727 acres from 25,631,683 acres in 1966 nearly offset small decreases in cropland, improved pasture and other improved land. The area of unimproved land decreased 6.8% to 61,519,737 acres in 1971 from 65,970,451 acres in 1966. Woodland, decreasing by 18.8%, accounted for the majority of this loss, while other improved land decreased 3.4%.

Economic classification of census-farms. Census-farms were divided into 12 economic classes according to the total value of products sold during the past calendar year (Table 11.30). Such a classification serves as a measure of the productive size of census-farms in Canada. The former division of census-farms into “commercial” and “small-scale” farms has been dropped, since what may be felt to be a commercial farm in one region might be considered small-scale in another. The group classified as “institutional farms, etc.” includes experimental farms, community pastures and institutional-type farms regardless of the amount of sales of agricultural products.

Type of farm. Table 11.31 shows that, with the exception of farms classified as “institutional farms, etc.”, all census-farms with sales of \$2,500 or more were classified as one of ten major product types. A criterion of 51% or more of total sales was used for this classification. For example, a census-farm was typed as a poultry farm if 51% or more of the total agricultural sales for the farm was obtained from the sale of poultry products. However, it was classed as a

dairy-type farm if 40% to 50% of total sales was obtained from dairy products, provided the sale of dairy products together with the sale of cattle and calves amounted to 51% or more of the total sales. Under these criteria, it was possible for a farm to qualify for more than one product type. To prevent this possibility, the ten product types were given a priority rating in the order listed in Table 11.31.

Size of census-farms. In 1971, 49% of the census-farms in Canada contained less than 240 acres compared with 53% in 1966 (Table 11.32). This decrease in the number of small holdings again indicates the trend toward consolidation of farms into larger holdings. However, the wide variation in the distribution of farms by size between provinces continues. In the Atlantic Provinces 71.8% of the census-farms were under 240 acres in size; in Quebec and Ontario 78.4% were under 240 acres; in the Prairie Provinces only 17.9% fell below 240 acres; and in British Columbia the percentage was 78.5 (Table 11.32).

Age of census-farm operators. The proportion of census-farm operators under 35 remained at approximately 15% of the total. Similarly, the number of operators in the middle age groups, 35-54, remained at 52% and those in the older age groups, 55 and over, remained at 33% (Table 11.33).

Farm machinery. Table 11.34 indicates that between 1966 and 1971 farm trucks increased by 7.3%, swathers 12.6%, pick-up hay balers 11.6% and forage crop harvesters 17.3%. Decreases were reported for automobiles, 8.9%, tractors, 0.3% and combines, 4.4%.

11.6 International crop statistics

Tables 11.35 and 11.36 are based on estimates published by the Foreign Agricultural Service, United States Department of Agriculture, and give the acreages and production of wheat and the production of oats and barley for the harvests of 1970 and 1971 with averages for the years 1965-69, in the leading countries of the world.

11.7 The marketing of agricultural products

11.7.1 The grain trade

Major changes were made in delivery quota policies for the 1970-71 crop year, reflecting recommendations of a special quota committee and bringing Wheat Board quota policies into line with provisions of the federal government's Wheat Inventory Reduction Program. A separate acreage basis was established for producer deliveries of wheat, and the acreage basis for other quota grains was revised. Producers were permitted to select alternate delivery points, thus improving their delivery opportunities. These modifications resulted in a system more responsive to market requirements by enabling the Board to call for delivery of specific kinds of grain to meet sales commitments, and contributed significantly to the export program. For additional details regarding delivery quota policies, see Statistics Canada publication *Grain trade of Canada* (Catalogue No. 22-201). Supply and disposition of Canadian grain for the crop years ended July 31, 1970 and 1971 are shown in Table 11.37.

11.7.1.1 The 1970-71 crop year

Estimated domestic supplies of wheat, oats, barley, rye, flaxseed and rapeseed totalled 2,629 million bu in the crop year 1970-71, a decrease of 3% from the 1969-70 total of 2,710 million bu. Marketings of these grains in the Prairie Provinces amounted to 785.3 million bu, a 19% increase over the 1969-70 level of 660.7 million bu and a 23% increase over the ten-year (1959-60 - 1968-69) average of 637.9 million bu. Marketings of wheat during the 1970-71 crop year, at 384.3 million bu, were down 7% and accounted for 49% of total deliveries. Marketings of the other major grains (totals for 1969-70 and ten-year averages, respectively, in parentheses) in millions of bushels were: oats 58.3 (20.9, 43.2); barley, 235.9 (168.4, 86.6); rye, 11.6 (7.6, 7.2); flaxseed, 33.7 (22.1, 15.9); and rapeseed, 61.5 (28.5, 12.2).

Wheat. Domestic supplies of wheat in 1970-71 amounted to 1,340.2 million bu, 13% below the 1969-70 record total of 1,536.1 million bu. The 1970 production of wheat was 331.5 million bu in contrast to 684.3 million bu in 1969, a decrease largely due to acceptance of the LIFT program by growers in western Canada, and carryover stocks were 1,008.7 million bu compared with 851.8 million bu. Exports of wheat and flour in terms of wheat during the 1970-71 crop year, at 435.2 million bu, were 26% above the 346.5 million bu exported in 1969-70, 37% more than the long-term average of 317.4 million bu and 7% more than the ten-year average of 405.6 million bu.

During the crop year 1970-71, marketing of western Canadian wheat was again conducted by the Canadian Wheat Board on a one-year Pool basis, the initial payment being \$1.50 per bu basis No. 1 Northern in store Thunder Bay or Vancouver. On February 11, 1972, the Board announced that a final payment involving the distribution of \$74.4 million would be made on wheat delivered by producers during the 1970-71 crop year.

Grain exports. The 1970-71 exports of bulk wheat, at 409.4 million bu, were higher than the preceding year's total of 317.7 million bu and above the recent ten-year average of 369.2 million bu. During the 1970-71 crop year, the People's Republic of China with purchases of 88.3 million bu remained Canada's principal wheat customer for the third consecutive year. Britain was the second largest wheat market with imports of 64.6 million bu, while Japan purchased 40 million bu and moved into third place on the list of Canada's wheat importers. Sales to the Federal Republic of Germany at 22.7 million bu increased sharply during the crop year under review and moved that country to fourth position. Other leading markets during 1970-71 with quantities in millions of bushels (1969-70 figures in parentheses), were as follows: India, 17.1 (16.5); Brazil, 15.5 (nil); Italy, 15.4 (12.1); Algeria, 14.3 (1.5); Egypt, 14.0 (3.2); Iraq, 13.5 (0.6); USSR, 12.1 (47.3); and Syria, 10.6 (4.2).

The export movement of Canadian wheat flour during the 1970-71 crop year amounted to 10.8 million cwt (24.8 million bu of wheat equivalent), some 8% below the 1969-70 total of 27 million bu. Cuba was Canada's major customer for wheat flour, taking 5.4 million cwt or 12.4 million bu of wheat equivalent and accounting for half of the crop year total. Britain, with imports equivalent to some 2.1 million bu, accounted for 8% of the crop year total and Ceylon and Indonesia imported 1.5 million bu and 1.2 million bu, respectively.

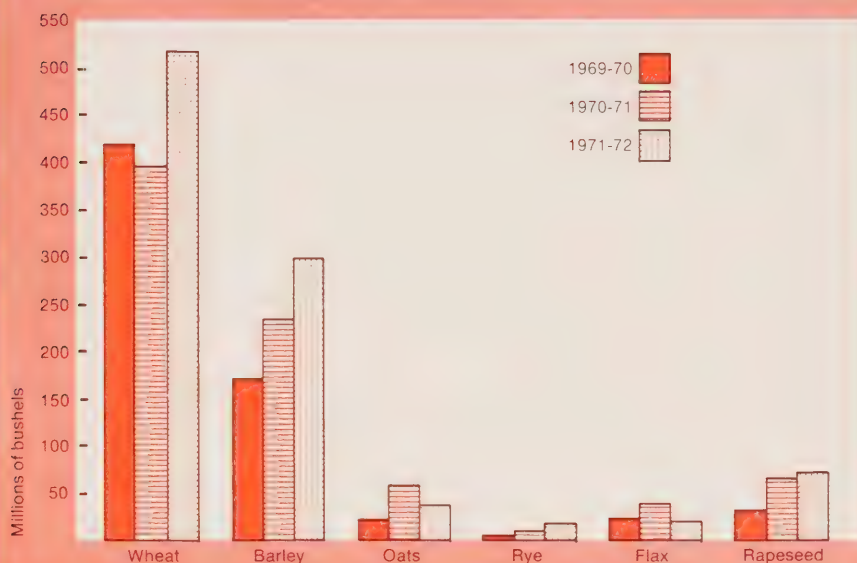
Combined exports of oats, seed oats, barley, rye, flaxseed and rapeseed (including customs exports of oatmeal and rolled oats, and malt in terms of grain equivalent) amounted to 269.9 million bu during the crop year 1970-71. This figure was sharply above both the comparable 1969-70 level of 138.1 million bu and the ten-year (1959-60 - 1968-69) average of 80.1 million bu. Exports of Canadian oats in bulk totalled 13.1 million bu during 1970-71, the highest level of exports recorded since 1965-66 (15.3 million bu), compared with 4.8 million bu shipped during the previous year. The Federal Republic of Germany was the principal market for this grain with purchases of 5.8 million bu; the Netherlands and Italy, at 2.5 million bu and 2.1 million bu, respectively, provided the bulk of the year's increased exports. Other shipments went to the United States, 0.9 million bu; Switzerland and Gibraltar, 0.6 million bu each; and Ireland, 0.4 million bu. In addition, exports of Canadian oatmeal and rolled oats amounted to the equivalent of 23,000 bu in 1970-71 against 61,000 the year before.

Barley exports, at 172.3 million bu, reached an all-time high during the 1970-71 crop year, and more than doubled the 82.7 million bu of 1969-70. Italy became Canada's largest market for this grain with imports of 33.2 million bu, an increase of 20.5 million bu over the previous year's total. Britain was the second largest market as purchases by that country rose to 29.5 million bu in 1970-71, registering a gain of 10 million bu over those of 1969-70. The Federal Republic of Germany and Japan also increased their imports in 1970-71, from 6.3 million bu to 28.7 million bu and from 16.9 million bu to 25.7 million bu, respectively, over 1969-70. Shipments to other major customers in millions of bushels (totals for the previous year in parentheses) were: the Netherlands, 9.9 (1.0); United States, 8.5 (10.3); Poland, 4.5 (4.8); Iraq, 4.4 (nil); Israel, 4.1 (5.3); Spain, 4.0 (nil); Norway, 3.7 (nil); Taiwan, 3.1 (0.7); Belgium and Luxembourg, 2.8 (0.1); Syria, 2.4 (nil); Ireland, 2.3 (0.5); and Denmark, 1.9 (0.4). In addition to the exports of Canadian barley as grain, shipments of malt were the equivalent of 7.3 million bu, some 31% above the 1969-70 figure of 5.6 million bu. During 1970-71 malt was exported to 23 different destinations, the major markets being Japan, 2.7 million bu; Venezuela, 0.7 million bu; Britain, Philippines and United States, 0.6 million bu each; and Brazil and Peru, 0.4 million bu each.

Exports of Canadian rye during the 1970-71 crop year amounted to 8.9 million bu, the best volume of clearances since 1966-67. Japan continued to be the principal market for this grain, importing some 4.8 million bu in 1970-71, more than twice the 1969-70 figure. Other major markets importing Canadian rye were as follows: Britain and Poland, 0.9 million bu each; the Netherlands, 0.7 million bu; Norway, 0.6 million bu; and United States and Portugal, 0.5 million bu each.

During 1970-71, clearances of Canadian flaxseed moving overseas amounted to 21.2 million bu, surpassed only by the record 21.6 million bu in 1956-57. The leading market for

Producer deliveries of grain



Canadian flaxseed was the Netherlands with imports amounting to 6.8 million bu, followed by Japan, 4.3 million bu; the Federal Republic of Germany, 3.2 million bu; Britain, 1.9 million bu; Belgium and Luxembourg, 1.3 million bu; and Spain, 1.2 million bu. In the 1970-71 crop year, trade in rapeseed amounted to 46.8 million bu, an all-time high, and more than double the 22.2 million bu of the previous year. Japan continued to be Canada's major market for this oilseed with purchases of 16.0 million bu, an increase of some 11% over 1969-70. Clearances to the Netherlands at 9.1 million bu; France, 4.5 million bu; the Federal Republic of Germany and Italy, 4.4 million bu each; India, 3.6 million bu; and Pakistan, 2.2 million bu, were well in excess of last year's exports to these countries.

11.7.1.2 The 1971-72 crop year

The 1971-72 crop year opened with carryover stocks of the six major grains (wheat, oats, barley, rye, flaxseed and rapeseed) at 1,054.2 million bu. Stocks of wheat at August 1, 1971 amounted to 734.2 million bu, significantly lower than the 1,008.7 million bu held in storage a year earlier. August 1, 1971 stocks of the other major grains in millions of bushels (1970 figures in parentheses) were: oats, 125.4 (141.3); barley, 144.3 (200.1); rye, 12.7 (10.6); flaxseed, 26.6 (6.0); and rapeseed, 11.0 (3.6).

Domestic production of the six major grains amounted to 1,633.9 million bu in 1971-72. Wheat increased from 331.5 million bu in 1970-71 to 529.6 million bu in 1971-72, resulting in a total supply for the 1971-72 crop year of 1,263.7 million bu. Oats declined from 367.8 million bu to 363.5 million bu, for a supply of 488.9 million bu in 1971-72. A record 601.6 million bu of barley was produced which, combined with opening stocks, also resulted in a record supply for 1971-72 of 745.9 million bu. Rye production declined to 21.9 million bu from 22.4 million bu in 1970-71, resulting in a supply for 1971-72 of 34.7 million bu. Flaxseed production decreased to 22.3 million bu from 48.9 million bu in the previous year, and rapeseed production at 95 million bu surpassed by a wide margin the 1970-71 crop of 72.2 million bu; total supplies of these oilseeds in 1971-72 were: flaxseed, 48.9 million bu and rapeseed, a record of 106 million bu.

Farmers' marketings of the six grains during the 1971-72 crop year amounted to a record 952.2 million bu, an increase of 21% over the 1970-71 total of 785.3 million bu. Four grains registered an increase in 1971-72 over 1970-71, with oats and flaxseed the exceptions.

Marketings of wheat at 517.5 million bu were 35% above the 384.3 million bu the previous year and accounted for 54% of all deliveries during 1971-72. Marketings of the other major grains in millions of bushels (1970-71 totals in parentheses) were: oats, 32.3 (58.3); barley, 295.5 (235.9); rye, 15.5 (11.6); flaxseed, 21.6 (33.7); and rapeseed, 69.8 (61.5).

During 1971-72, Canada exported a record 823.8 million bu of the six major grains, including 24.7 million bu of wheat flour in terms of wheat equivalent. Export clearances of wheat rose to 478.1 million bu, some 17% above the 1970-71 total of 409.4 million bu and nearly 27% more than the ten-year (1960-61 - 1969-70) average of 377.5 million bu. Exports of oats at 10.2 million bu were below the 1970-71 total of 13.1 million bu. Barley exports rose to a record 224.3 million bu from the 1970-71 level of 172.3 million bu and rye exports also climbed to 10.8 million bu from 8.9 million bu. Flaxseed exports registered gains in 1971-72, rising to 25.7 million bu, but rapeseed exports declined to 42.6 million bu.

Total domestic consumption of wheat in Canada declined slightly to 170.6 million bu in 1971-72 from 170.8 million bu in 1970-71, due to a relative decrease in the estimated quantity fed, which more than offset an increase in seed requirements. Domestic utilization of oats declined to 360.1 million bu, from 370.5 million bu, and rye to 8.4 million bu from 11.4 million bu. Barley rose to 321.4 million bu from 291.9 million bu. Domestic disappearance of flaxseed increased to 7.2 million bu from 7.1 million bu, and that of rapeseed from 18 million bu to 21.6 million bu.

Stocks of wheat at the close of the crop year on July 31, 1972 stood at 589.4 million bu, 20% below the closing stocks of the previous year. Year-end stocks of the other major grains were: oats, 118.3 million bu; barley, 194 million bu; rye, 15.5 million bu; flaxseed, 16 million bu; and rapeseed, 41.8 million bu.

11.7.1.3 The International Wheat Agreement 1971

A United Nations Wheat Conference was convened under the auspices of the United Nations Conference on Trade and Development (UNCTAD) at Geneva in January 1971 to negotiate a new agreement to replace the International Grains Arrangement (IGA) 1967 which was to expire on June 30, 1971. Canadian objectives at the conference were to conclude a meaningful international agreement to provide market stability and to assure adequate price levels for efficient wheat producers. It was also made clear from the outset that Canada would not accept an agreement that would put her wheat exports at a competitive disadvantage and that an acceptable agreement would have to provide equity in rights and obligations among exporters and between exporting and importing countries.

Under the 1949 and subsequent International Wheat Agreements (IWA), Canada, alone of the major exporters, had a firmly established price range, with No. 1 Northern being the reference wheat and Thunder Bay the reference port. The IGA 1967 was an attempt to strengthen pricing provisions by having firm price ranges established for the principal grades of wheat of all major trading nations. Unfortunately, the IGA minimum prices were breached by certain exporting countries even before the Arrangement became operative.

Prior to the 1971 International Wheat Conference, the United States rejected the IGA pricing formulae as a basis for a new agreement. It was proposed that there be a return to the old IWA formula under which only Canada would have a specified price range. The latter proposition was unacceptable to Canada.

The Conference was unable to reach agreement on either the establishment of reference grades or the establishment of reference points and related price equivalents. As a result, it was not possible to devise meaningful price provisions which met the objectives of market stability and equity of rights and obligations among exporters and between exporting and importing countries.

The result of the Conference was the formulation of the International Wheat Agreement 1971, which became effective for the period July 1, 1971 to June 30, 1974. It contains neither price provisions nor related rights and obligations but provides that the International Wheat Council shall request the Secretary-General of UNCTAD to convene a conference when it is judged that the price question can be successfully negotiated.

The International Wheat Council continues as a forum for international consultation and co-operation, and as an agency for the collection and dissemination of information on the world wheat situation. Membership in the new Wheat Trade Convention remains the same except for the admission of the USSR as an exporter, and Brazil, Taiwan, Panama and Syria as

importers. The agreement also provides for a continuous review of the world wheat market situation through the Advisory Sub-committee on Market Conditions.

The Food Aid Convention under the new agreement is similar to that under the IGA 1967. Except for the withdrawal of the United Kingdom and Norway, membership in the convention is the same as under the previous pact. The nine member countries have pledged themselves to supply, as food aid to developing countries, a minimum of 4 million metric tons of grain or grain products suitable for human consumption, or cash equivalent, compared with a total obligation of 4.3 million tons in 1970-71.

11.7.1.4 Miscellaneous grain trade statistics

Lake shipments of grain. The 1971 navigation season opened at the Canadian Lakehead on April 10 and closed on December 29. Details of lake shipments for 1970 and 1971 are given in Table 11.38.

Licensed grain storage. Total grain storage capacity in Canada, licensed under the provisions of the Canada Grain Act by the Canadian Grain Commission, amounted to 699.5 million bu at December 1, 1970, compared with 700.1 million bu at the same date in 1969 (Table 11.39). On July 31, 1971, 62.1% of the licensed storage capacity was occupied as compared with 73.6% on the same date of 1970.

Production and exports of wheat flour. Production of wheat flour in the 1970-71 crop year amounted to 38.5 million cwt and wheat milled for flour totalled 87.5 million bu; both were below the corresponding totals for 1969-70. Of the wheat milled for flour, approximately 71.9 million bu were western Canadian spring wheat (other than Durum) and the remainder was made up of 8.6 million bu of Ontario winter wheat, 5.2 million bu of Durum wheat and 1.8 million bu of other types. Utilization of milling capacity, based on a daily operating potential of some 170,000 cwt, averaged 76.9% in 1970-71 compared with 77.7% in the previous year. Figures for the crop years ended July 31, 1969-71, including exports of wheat flour, are given in Table 11.40.

11.7.2 Livestock marketings

Marketings of cattle through public stockyards, shipped direct to packing plants and on export, and to country points in another province amounted to 3.4 million head in 1972, up 3.1% from 3.3 million in 1971. All western provinces had increases, the largest (13.6%) occurring in Saskatchewan. In the East, marketings were generally lower although there was a sharp increase in New Brunswick. The movement direct to public stockyards in Canada was down slightly in 1972 compared with the previous year, but the movement direct to packing plants at 1.9 million head was up 5.9%. Total marketings of calves in 1972 amounted to 1.2 million, practically unchanged from the 1971 total; marketings were up slightly in the West and Ontario, but generally well down in the other provinces. There was an increase in quality of cattle marketed with higher numbers grading choice, especially in the case of heifers. The weighted average price per 100 lb. of choice slaughter steers at Toronto in 1972 was \$37.20 compared with \$34.30 in 1971, and well above the five-year average (1965-69) of \$30.98. Good feeder steers at Toronto had a weighted average price of \$39.75 compared with \$34.15 in 1971.

Pig marketings totalled 9.4 million, down 7% from 10.2 million in 1971; decreases occurred in all provinces. The average weight of pigs slaughtered in federally inspected plants in 1972 was 164.2 lb., practically unchanged from the previous year. The 1972 weighted average price for index 100 pigs at Toronto was \$35.10 compared to \$25.80 in 1971.

Sheep and lambs shipped to public stockyards, packing plants, direct on export, and from country points in one province to those in another totalled 270,948 in 1972, up 7% from 253,120 in 1971. This increase was due entirely to increased marketings in the West which more than offset a decrease in the East. Not only were marketings higher but the 1972 price for good lambs at Toronto was \$31.50 per 100 lb. compared with \$30.65 in 1971.

11.8 Government aid and controls

11.8.1 The role of government in the grains industry

Government's interest and involvement in the grains industry predates Confederation and is a record of policies relating to land use and settlement; transportation; grain elevators, storage, handling and forwarding; marketing methods and opportunities; income security; and the many ramifications of international competition and the search for international

co-operation in the sale of grain. The federal government's role is currently focused in the Department of Agriculture, the Department of Industry, Trade and Commerce, and in the semi-autonomous bodies reporting to Parliament through Ministers of the Crown — the Canadian Grain Commission and the Canadian Wheat Board, as well as the Canadian International Grains Institute. To provide a forum for co-ordination, consultation and consensus on industry recommendations to government, the Canada Grains Council has been established. To co-ordinate, review and recommend federal policies, having due regard to all organizations concerned, a Special Advisory Group on Grains has been formed. The Minister responsible for the Canadian Wheat Board is designated as primarily responsible for federal government grains policy.

11.8.1.1 Grains Group

In 1970, the Minister responsible for the Canadian Wheat Board organized the Special Advisory Group on Grains (known as the Grains Group) made up of policy advisers drawn from the Canada Department of Agriculture, the Department of Industry, Trade and Commerce, the Canadian Transport Commission and the railways. Under the Minister's direction the Grains Group examines the problems of the grains industry in the areas of production, transportation and handling, and marketing, proposes measures to adjust grains production to known and projected markets, identifies and develops market opportunities, and stimulates more efficient handling and transportation of grain of the types and quantities required to meet domestic and export market demands. It also co-ordinates, reviews and recommends federal policies for grains and grain production. Implementation of recommended policies subsequently adopted by the government is through government departments or other agencies concerned with the grains industry.

Production. The Canada Department of Agriculture conducts a wide-ranging research program in plant breeding and production methods to improve varieties, yields and quality of grains for which there is a domestic and export demand. A recent innovation has been the provision, well in advance of spring planting, of information on initial prices to be guaranteed to farmers for the new crop of wheat, oats and barley, and on minimum deliveries to be accepted by the Canadian Wheat Board during the crop year.

Other programs are the Grassland Incentive Program, which encourages producers to increase their forage acreage, maintain their grain acreage and production in relation to market demands for grain and, at the same time, provide increased forage for an expanding livestock industry; and the Two-Price Wheat Program, which provides some stability to the domestic wheat market by ensuring that producers receive \$3.00 per bu for that portion of wheat used for domestic human consumption, while maintaining the price of wheat to domestic millers at \$1.95½ for the top grade of milling wheat regardless of variations in export prices.

Transportation and handling. The Grains Group studies of the grain handling and transportation system, undertaken to identify the constraints and alternatives to the system and to provide a base for discussion and subsequent action, were released in August 1972, and are available from the Canada Grains Council, Winnipeg, which is judged to be the forum most representative of the parties concerned. Through the Grain Handling and Transportation Committee formed under the Grains Council, producers and other organizations have direct participation in deciding on future transportation and handling developments in the industry.

The government has purchased 2,000 specially designed hopper cars to maintain the movement of grain to export positions, and the Canadian Wheat Board has been assigned the responsibility of ensuring their most effective use. Record shipments amounting to 817 million bu were handled in the 1971-72 crop year, and with the new equipment it is expected that in the 1972-73 crop year a new record will be achieved.

Marketing. In order to broaden the assistance provided for sales and market development of grains, oilseeds and products, the services and programs of the Department of Industry, Trade and Commerce are consolidated in a new Grain Marketing Office, which maintains regular contact with the Canadian Wheat Board, other agencies and organizations concerned with grain marketing, trade commissioners abroad and the private trade with the objective of maximizing exports from the grains sector. The Rapeseed Utilization Assistance Program provides for an increased level of product development grants through the Rapeseed Association of Canada. A broad program of trade promotion is maintained, including participation in Canadian trade fairs.

The Market Development Program for Grains and Oilseeds, designed to extend the scope of initiative, particularly in the private sector, has been established, and a Market Development Fund of up to \$10 million annually has been created to promote the marketing of grains, oilseeds and other agricultural products. Assistance under the Program is available to Canadian companies, agencies, industry associations, universities, institutes, and similar entities for projects contributing to a sustained increase in grains and oilseeds sales. Projects have been implemented or are under consideration covering a broad range of activities, including grain handling, storage, processing, market testing of products, developing new products or processes, and conducting feasibility studies related to expansion of exports of grains, oilseeds and their products.

Credit. Canada has been selling grain on credit since 1952. Originally, terms of up to three years were offered at commercial rates of interest. The need for a broader and more competitive program was recognized and in 1968 the Prime Minister stated that the government would review and amend credit facilities for the sale of Canadian grain in order to improve its competitive position in export markets. Subsequently, Cabinet approved a revised and improved credit program which includes terms of up to three years at competitive interest rates, and concessional terms of over three years at subsidized interest rates.

Most credit sales of Prairie grain on terms of three years or less are financed under Section 12 of the Canadian Wheat Board Act. Credit sales not administered by the Board, including sales of other than western grains, on terms of three years or less and sales on terms of more than three years are insured under Section 27 of the Export Development Act. In the 1971-72 crop year, sales of almost 160 million bu of wheat, or about one third of total wheat exports, were made on credit. In addition, over 16 million bu of barley were exported on credit. A large volume of grain is being sold on credit in the 1972-73 crop year.

Food aid. The Canadian Food Aid Program has expanded sixfold since the early 1960s. For the years 1969-70 to 1971-72, an average of \$90 million annually was spent by the government on gifts of food, mainly wheat and flour, to needy countries. About 85% of the total food aid is given to foreign governments under a bilateral program. Any revenues that accrue to recipient governments are channelled to economic development activities in the recipient country. Most of the balance of the funds in the aid program is made available for purchases of Canadian wheat, flour and other foods by the World Food Programme of the Food and Agriculture Organization. Much of this food is distributed directly to workers abroad in full or part payment for their labour on economic development projects, but it may also be used for emergency relief and for special feeding projects, for example, in schools and in hospitals. In addition, Canada makes regular contributions, averaging \$1 million, in flour, to UNRWA for Palestinian refugees. Rapeseed is included in the aid program. In the current year some \$20 million of the food aid budget is being spent on rapeseed and rapeseed oil for India and Bangladesh.

11.8.1.2 The Canadian Grain Commission

The Canadian Grain Commission was established by the Canada Grain Act on April 1, 1971. It replaced the Board of Grain Commissioners for Canada which was originally established by the Canada Grain Act of 1912. It is composed of a Chief Commissioner and two Commissioners and is under the jurisdiction of the Canada Department of Agriculture. Headquarters of the Commission is at Winnipeg and other offices are situated across Canada, with the largest units at the port areas of Vancouver, Thunder Bay and Montreal.

The Commission is responsible for administration of the Canada Grain Act, including inspection, weighing and storage of grain; for fixing maximum tariffs for charges by licensed elevators; for establishing grain grading standards; and for operation of the Canadian government elevators located at Moose Jaw, Saskatoon, Calgary, Edmonton, Lethbridge and Prince Rupert. All operators of elevators in western Canada and elevators in eastern Canada handling western-grown grain for export, as well as grain dealers in western Canada, must be licensed by the Commission and must file security by bond or otherwise as a guarantee for the performance of all obligations imposed upon them by the Canada Grain Act or by the Canada Grain Act Regulations. On a fee basis, the Commission provides mandatory official inspection, grading and weighing of grain, as well as registration of terminal elevator and eastern elevator receipts. The Economics and Statistics Division of the Commission is the basic source of information on grain handled through the Canadian licensed elevator system.

The Commission's Grain Research Laboratory conducts surveys of the quality of each year's grain crops and of grain moving through the Canadian elevator system. It provides information on the quality of varieties and grades of grain to the Inspection Division, collaborates with plant breeders in studies on new grain varieties and undertakes basic research in relation to quality characteristics of cereal grains and oilseeds. With the introduction of the protein factor in segregating wheat grades, the Commission has extended and decentralized its protein-testing facilities and is now able to test samples drawn from carlots of wheat and make the results known to terminal elevator operators prior to unloading cars at the terminals. The Laboratory monitors this protein testing to ensure uniformity among testing units, and also assists in testing the quality of cereals developed by plant breeders to determine the licensing potential of the variety.

The Commission has four Assistant Commissioners — one in Alberta, two in Saskatchewan and one in Manitoba — who investigate complaints of producers and inspect primary (country) elevators in their respective provinces. All grain elevators with their equipment and stocks of grain may be inspected at any time by officials of the Commission.

The Commission sets up western and eastern grain standards committees which participate in establishing grain grades and grade specifications and recommend standard and export standard samples for various grades of grain. It also appoints grain appeal tribunals to hear appeals against the grading of grain by the Commission's inspectors; decisions of these tribunals are final.

11.8.1.3 The Canadian Wheat Board

The Canadian Wheat Board was established under the Canadian Wheat Board Act of 1935 for the purpose of "marketing in an orderly manner, in interprovincial and export trade, grain grown in Canada". The legislation established the Wheat Board as the sole marketing agency for Prairie wheat, oats and barley sold interprovincially or internationally. Other crops, such as rye, rapeseed, flaxseed, buckwheat and mustard are marketed by the private grain trade.

The sale of Prairie-grown wheat, oats and barley is carried out in one of two ways: sales negotiated directly by the Wheat Board, and those negotiated through grain exporting companies acting as its agents.

Delivery of the kinds, grades and quantities of grain needed by customers is essential to the Wheat Board's marketing program. This is accomplished in two stages: the first involves the delivery of grain by the producer from his farm to the local country elevator; the flow of grain from farms to country elevators is regulated under a delivery quota system which enables the Wheat Board to call for the delivery of the kind and grade of grain required to meet market commitments, and, at the same time, to allocate delivery opportunities equitably among all grain producers; the second stage involves the movement of grain from country elevators to large terminal positions in eastern Canada, at Thunder Bay, at Churchill, and on the west coast. The transportation of grain to terminals on the west coast, at Thunder Bay and at Churchill is carried out by the railways under maximum tariffs established under the terms of the National Transportation Act. The forwarding of grain from Thunder Bay to eastern positions is done largely by lake vessels under freight rates negotiated by the Wheat Board and by private shippers with lake vessel operators. Extensive planning and a high degree of co-ordination within the grain handling and transportation industry are required to carry out the complex task of moving grain from country elevators to forward positions. The Wheat Board, which co-ordinates the entire movement, programs rail shipments from country elevators to terminals on a weekly basis in accordance with sales requirements.

The producer receives payment for his wheat, oats and barley in two stages: an initial payment price is established by Order in Council before the start of a crop year; this price, less handling costs at the local elevator and transportation costs to Thunder Bay or Vancouver, is the initial price received by the producer and is, in effect, a guaranteed floor price. If the Wheat Board, in selling the grain, does not realize this price and the necessary marketing costs, the deficit is borne by the federal treasury; after the end of the crop year when the Board has sold all the grain or otherwise disposed of it in accordance with the Canadian Wheat Board Act, the Board, if authorized by Order in Council, makes a final payment to producers.

Under the Prairie Grain Advance Payments Act, administered by the Board, producers may receive, through their elevator agents, interest-free cash advances on farm-stored grain in

accordance with a prescribed formula. The purpose of this legislation is to make cash available to producers pending delivery of their grain under the quotas established.

Under provisions of the Temporary Wheat Reserves Act, the Minister of Finance, out of the Consolidated Revenue Fund, pays to the Wheat Board the carrying charges on wheat in excess of 178 million bu in commercial storage at the end of the crop year.

11.8.1.4 The Canadian International Grains Institute

The Canadian International Grains Institute, first named the Canadian Grains Institute, was incorporated in July 1972; it operates in affiliation with the Canadian Wheat Board and the Canadian Grain Commission and financial responsibility is shared by the federal government and the Canadian Wheat Board. It is designed to contribute to the maintenance and enlargement of markets at home and abroad for Canadian grains, oilseeds and their products, and offers instructional programs to foreign participants selected from countries purchasing these commodities and to Canadian participants associated with the grain industry. Courses are offered in grain handling, transportation, marketing, flour milling, bread baking and macaroni manufacturing, and lectures and practical training are given in analytical methods used in processing and utilization of grains and oilseeds. The Institute is located in the Canadian Grain Commission Building in Winnipeg. Facilities include classrooms, conference rooms, offices, library, laboratories, a 9-ton, 24-hour-capacity flour mill and a pilot bakery.

11.8.1.5 The Canada Grains Council

At the suggestion of the Prime Minister, the Canada Grains Council was established in 1969 to improve co-ordination within the industry and to assist in reaching a consensus within the industry on recommendations to government. Its further aim is to assist in improving Canada's share of world markets for all grains and grain products and to expand their use in domestic markets. The administration costs of the Council are shared by the government and by industry members. Membership is open to all non-governmental organizations and associations whose members are directly engaged in the production, handling, transportation or marketing of grain and grain products. The Council's day-to-day activities are run by a Secretary-General and his staff.

In its four years of operation, the Council has demonstrated the capacity of the industry to work together on matters of mutual interest, and has made a number of recommendations to government on issues either referred to it by government or initiated by the Council itself. The Council has also issued a number of publications in line with its market promotion functions. These include *Feed grains of Canada*, printed in six languages, *Overseas mission reports*, and its *1972 Evaluation of the domestic feed grain market*; in addition, it publishes a regular marketing information bulletin.

In the summer of 1972, the Council undertook the vital task of assessing and proposing changes in Canada's grain handling and transportation system. The committee formed for this purpose from all segments of the industry will review various reports on the subject, and will propose changes to the system for efficiency and for economy of operation in the future.

11.8.2 Government involvement in other farm products

Governments in Canada at both the federal and provincial levels have from the beginning enacted measures to improve and expand the performance of the agricultural sector. Originally, the emphasis was on production increases and the control and eradication of pests and diseases. Gradually, however, with rising production and increasing specialization on the part of farmers, problems in marketing began to emerge.

To ensure quality, inspection and grading procedures and standards were established, but the periodic collapse of prices caused by bumper crops and intensified by the general inability of large numbers of producers to bargain on an equitable basis with far fewer buyers has been a much more difficult part of the marketing problem.

The first attempts to provide bargaining power to producers was the organization of voluntary marketing co-operatives. All provinces eventually passed legislation for incorporation of these co-operatives, and most of them also provided additional assistance in various forms. Federally, the introduction of the Agricultural Products Marketing Act provided for financial guarantees to producers willing to market their crops on a pooling-of-returns basis. Further information on the role of co-operative organizations is given in Chapter 17.

Although much co-operative marketing was successful, particularly in the first years of incorporation, it was found that the voluntary aspect for many marketing co-operatives was a serious weakness, many members dropping out in good times and making their own deals. Thus, it was felt that a type of marketing organization was needed with the legal power to control the output of all producers of a certain product in a certain area, and as a result marketing control legislation was adopted providing for various types of boards and agencies.

11.8.2.1 Product controls

The federal and provincial departments of agriculture co-operate in establishing and enforcing grades of quality standards for various foods. Some control over size and types of containers used for distribution of agricultural products is exercised by the Canada Department of Agriculture, and the Department of Consumer and Corporate Affairs enforces regulations pertaining to weights and measures.

Standards related to health and sanitation in food handling are developed and enforced at all three levels of government — municipal, provincial and federal. Examples of provincial and municipal action include laws pertaining to pasteurization of milk, inspection of slaughter-houses and sanitary standards in restaurants. At the federal level, inspection by the Health of Animals Branch of the Canada Department of Agriculture of all meat carcasses that enter into interprovincial trade is required; the Foods and Drugs Directorates of the Department of National Health and Welfare have wide responsibility for food composition standards; and the Department of Consumer and Corporate Affairs has jurisdiction over advertising.

11.8.2.2 Marketing controls

The Agricultural Products Co-operative Marketing Act (RSC 1970, c.A-6) was passed in 1939 as a result of a federal government decision to assist orderly marketing by encouraging the establishment of pools that would give the producer the maximum sales return for his product, less a maximum margin for handling expenses agreed upon in advance. The Wheat Co-operative Marketing Act was passed at the same time but was in effect for only one year, and the Agricultural Products Co-operative Marketing Act now covers the marketing of all agricultural products except wheat produced in the Canadian Wheat Board area.

The purpose of this Act is to aid farmers in pooling the returns from sale of their products by guaranteeing initial payments and thus assisting in the orderly marketing of the product. The government may undertake to guarantee a certain minimum initial payment to the producer at the time of delivery of the product, including a margin for handling; sales returns are made to the producer on a co-operative plan. The guaranteed initial payment may be up to a maximum of 80% of the average price paid to producers for the previous three years, the exact percentage to be recommended by the Minister of Agriculture who enters into an agreement with the selling agency for the product. For 1971 crops, agreements were made for the marketing for processing of corn and apples in Quebec and of beans in Ontario.

Milk control legislation was enacted in nearly all provinces prior to 1940. Most provinces finance these milk control agencies partly from public funds and partly through the collection of licence fees and assessments from those engaged in the fluid milk industry. Milk control agencies have the authority to license those engaged in the fluid milk industry and can revoke licences for failure to conform with agency orders.

In all provinces with such boards, the milk control board or similar agency sets the minimum price which distributors in specified markets may pay producers for Class I milk, that is, milk actually sold for fresh fluid consumption. In British Columbia, a formula is used as a guide in determining minimum prices to producers. Most provinces set either minimum or maximum wholesale and retail prices for fluid milk. Quebec sets a minimum and maximum price range. Saskatchewan sets minimum prices applicable to all retail milk sales and maximum prices applicable to milk sales from retail wagons, as well as minimum-maximum price range at the wholesale level. Minimum prices are in effect in Alberta, Nova Scotia and New Brunswick. Maximum prices are set in Manitoba and no control is exercised over milk prices at the wholesale and retail levels in Ontario and British Columbia. In these three provinces some degree of price competition has developed between store sales and home delivery.

The powers given to milk control boards include: authority to inquire into all matters pertaining to the fluid milk industry, to define market areas, to arbitrate disputes, to examine

the books and records of those engaged in the industry, to issue and revoke licences and to establish a price for milk; and authority to require a bond and periodic reports from distributors, payments to be made to producers by a certain date each month, distributors to give statements to suppliers or to give notice before ceasing to accept milk from any producer, and producers to give notice before ceasing to deliver milk to any distributor.

The Ontario Milk Marketing Board, a producer-controlled agency, was officially established by the Milk Commission of Ontario on November 1, 1965. Certain powers were assigned to it by the Commission regarding the production, marketing and transportation of milk and it also has the power to set the prices that milk processors must pay to their suppliers.

The Canadian Dairy Commission, established in 1966, was a new departure in the area of agricultural marketing because it was the first national marketing board to be established since creation of the Canadian Wheat Board in 1935. The Commission has the power to purchase any dairy product and package, process, store, ship, insure, import, export, or sell or otherwise dispose of any dairy product purchased by it. The Commission may also make payments to producers of milk and cream for the purpose of stabilizing the price of these products.

A comprehensive milk marketing plan was agreed to by the Canadian Dairy Commission and the milk marketing agencies of Ontario and Quebec in January 1971 establishing a market-sharing quota system for industrial milk and that portion of milk shipped by fluid producers which is used for manufacturing purposes. The agreement also covered cream shippers in Quebec, and cream shippers in Ontario entered the plan on April 1, 1971. Prince Edward Island was the third province to enter into the program, which became operative in that province on December 6, 1971. Producers in Alberta entered on April 1, 1972 and Manitoba and Saskatchewan came under the program on July 1, 1972. More than 95% of the manufacturing milk and cream sold in Canada now comes under the market-sharing program. With the market-sharing arrangement, each producer receives a market price related to Canadian price support levels for deliveries up to his market share. Prices for deliveries over market share are related to world prices for surplus dairy products.

Additional information on the role of the Commission with regard to dairy production and income stabilization is given in Section 11.2.2.

Producer marketing boards were introduced during the 1930s to give agricultural producers legal authority under certain conditions to control the marketing of their produce. The Natural Products Marketing Act of 1934 attempted to provide this power at the federal level but the courts ruled that the subject was outside federal jurisdiction. The subsequently introduced Natural Products Marketing (British Columbia) Act, 1936 was found to be within the powers of provincial governments and it has since been used as a model for marketing board legislation as it evolved in all ten provinces.

While marketing board legislation has been revised from time to time on the basis of experience and there are variations in detail from province to province, the same basic powers are given to producers in all provinces. These include authority for a duly constituted producer board to control the marketing of 100% of a specified commodity produced in a designated area. A producer board, in at least some provinces, may set production quotas for each farmer. One producer board may control the marketing of several related commodities and the designated area may be either the whole or part of a province. A producer vote is usually required to establish a producer marketing board whose powers are delegated either by a provincial marketing board, which has certain supervisory authority, or by the Lieutenant-Governor in Council.

The powers of a producer marketing board provided by provincial legislation are necessarily limited to trade within the province. Under the Agricultural Products Marketing Act (RSC 1970, c.A-7), the federal government may delegate to a marketing board powers with respect to interprovincial and export trade similar to those it holds under provincial authority with respect to intraprovincial trade. This Act also gives the Governor in Council the right to authorize a provincial marketing board to impose and collect levies from persons engaged in the production and marketing of commodities controlled by it for the purposes of the board, for the creation of reserves and for the equalization of returns.

The federal Farm Products Marketing Agencies Act was passed in January 1972 and is the enabling legislation for the creation of national marketing agencies or boards. National agencies may be set up, when producers and provincial authorities desire it, for any

agricultural commodities which, due to widespread production in Canada or for other reasons, cannot be effectively marketed in an orderly manner under the jurisdiction of individual provincial boards. The Act establishes a National Farm Products Marketing Council to advise the Minister of Agriculture on all matters relating to the establishment and operation of national agencies, to review the performance of and assist in promoting effective marketing by these agencies and to consult with interested provinces on a continuing basis concerning the establishment of national marketing agencies. By late 1972 all provinces but Newfoundland had signed an agreement for the formation of a national egg marketing agency.

During 1971 there were 96 marketing boards in operation in Canada, including the milk control boards mentioned earlier in this Section, and the Canadian Wheat Board which is a federal board. Boards have now been established in all of the provinces, led by Quebec with 26 and Ontario with 22. An estimated 50% of 1971 farm cash income was received from sales made under the jurisdiction of marketing boards. A wide variety of agricultural commodities were sold under marketing boards, including grains, pigs, milk, fruit, potatoes and other vegetables, tobacco, poultry, eggs, wool, soybeans, honey, maple products and wood from farm woodlots. By the end of 1971, 61 provincial boards had been delegated authority by the federal government to control their products in interprovincial and export trade and eight of them had been authorized to collect levies on the commodities marketed under their responsibility.

Sources

- 11.1 Information Division, Canada Department of Agriculture.
- 11.2 Information Division, Canada Department of Agriculture; Agricultural Stabilization Board; Canadian Dairy Commission; Crop Insurance Division, Canada Department of Agriculture; Guaranteed Loans Administration, Department of Finance; Grains Marketing Office, Department of Industry, Trade and Commerce; Farm Credit Corporation; Canadian Livestock Feed Board.
- 11.3 Supplied by respective provincial government departments.
- 11.4 Agriculture Division, Industry Statistics Branch, Statistics Canada; except Tobacco: Manufacturing and Primary Industries Division, Industry Statistics Branch, Statistics Canada.
- 11.5 Agriculture Sub-division, Census Branch, Statistics Canada.
- 11.6 - 11.7 Agriculture Division, Industry Statistics Branch, Statistics Canada.
- 11.8 Grains Group, Department of Industry, Trade and Commerce; Marketing and Trade Division, Canada Department of Agriculture.

Tables

.. not available
 ... not appropriate or not applicable
 — nil or zero
 -- too small to be expressed

e estimate
 p preliminary
 r revised
 certain tables may not add due to rounding

It should be noted that figures shown for the latest year are subject to revision, and that some figures for earlier years have been revised. Figures for Newfoundland are not included, as agricultural activity there is of minor importance and production small.

11.1 Cash receipts from farming operations (excluding supplementary payments)¹, by province, 1967-71 (thousand dollars)

Province	1967	1968	1969	1970	1971
Prince Edward Island	33,830	34,476	37,870	44,575	39,104
Nova Scotia	54,182	55,026	63,380	64,934	62,572
New Brunswick	48,139	49,034	51,281	57,472	51,599
Quebec	620,120	636,814	672,495	666,029	692,266
Ontario	1,281,568	1,318,823	1,377,900	1,382,643	1,385,447
Manitoba	372,700	364,660	349,912	333,978	366,986
Saskatchewan	976,187	893,114	712,416	688,408	904,818
Alberta	792,901	799,939	727,169	691,862	771,280
British Columbia	196,785	204,615	197,461	209,095	220,820
Total	4,376,412	4,356,501	4,189,884	4,138,996	4,494,892

¹ See text in Section 11.4.1.

11.2 Cash receipts from farming operations, by commodity or other source, 1967-71 (thousand dollars)

Item	1967	1968	1969	1970	1971
Wheat	766,018	605,248	476,809	569,404	649,261
Wheat, Canadian Wheat Board payments	270,192	315,302	60,199	6,566	75,202
Oats	25,920	23,634	28,104	21,331	32,222
Oats, Canadian Wheat Board payments	12,331	8,420	4,815	—	1,738
Barley	99,815	84,893	88,739	144,668	192,226
Barley, Canadian Wheat Board payments	29,256	35,860	3,501	—	16,606
Canadian Wheat Board net cash advance payments	6,569	52,616	157,906	-105,397	-84,565
Rye	7,804	5,923	4,870	8,379	10,157
Flaxseed	46,235	26,593	56,792	59,700	57,100
Rapeseed	43,192	33,197	53,653	96,467	130,913
Soybeans	21,353	22,363	16,661	23,732	27,898
Corn	28,234	26,182	37,703	49,376	59,186
Sugar beets	13,051	12,415	15,549	15,145	18,576
Potatoes	51,726	60,701	63,460	88,437	79,347
Fruits	79,637	86,606	79,549	83,205	84,820
Vegetables	97,332	94,502	94,503	98,938	98,541
Tobacco	156,710	142,374	144,893	154,809	135,389
Other crops	91,863	99,147	92,248	110,391	118,935
Total, cash receipts from crops	1,847,238	1,735,976	1,479,954	1,425,151	1,703,552
Cattle and calves	929,723	980,392	964,117	978,221	1,071,213
Pigs	408,806	409,900	461,294	486,998	430,953
Sheep and lambs	8,485	8,659	8,730	7,934	8,692
Dairy products	624,416	644,223	677,030	678,883	704,896
Poultry	223,608	227,952	249,641	258,859	258,027
Eggs	148,648	163,821	188,450	172,083	152,049
Other livestock and products	49,823	48,510	47,830	43,638	46,628
Total, cash receipts from livestock and products	2,393,509	2,483,457	2,597,092	2,626,616	2,672,458
Forest and maple products	22,270	21,817	17,883	17,328	17,307
Dairy supplementary payments	103,229	109,700	86,942	66,603	100,336
Deficiency payments	10,166	5,551	8,013	3,298	1,239
Total, cash receipts excl. supplementary payments	4,376,412	4,356,501	4,189,884	4,138,996	4,494,892
Supplementary payments ¹	6,137	7,968	9,935	58,207	18,255
Total, cash receipts	4,382,549	4,364,469	4,199,819	4,197,203	4,513,147

¹ See text in Section 11.4.1.

11.3 Net income of farm operators from farming operations¹, by item and by province, 1967-71 (thousand dollars)

Item and province	1967	1968	1969	1970	1971
ITEM					
1. Cash receipts from farming operations	4,376,412	4,356,501	4,189,884	4,138,996	4,494,892
2. Income in kind	464,315	491,603	517,631	515,617	507,145
3. Supplementary payments	6,137	7,968	9,935	58,207	18,255
4. Realized gross income (items 1+2+3)	4,846,864	4,856,072	4,717,450	4,712,820	5,020,292
5. Operating and depreciation charges	3,221,334	3,350,729	3,443,448	3,503,846	3,660,713
6. Realized net income (items 4-5)	1,625,530	1,505,343	1,274,002	1,208,974	1,359,579
7. Value of inventory changes	-150,233	204,713	290,272	65,532	233,966
8. Total gross income (items 4+7)	4,696,631	5,060,785	5,007,722	4,778,352	5,254,258
Total, net income (8-5)	1,475,297	1,710,056	1,564,274	1,274,506	1,593,545
PROVINCE					
Prince Edward Island	5,467	8,579	8,493	13,822	6,001
Nova Scotia	16,936	17,730	23,391	23,297	17,786
New Brunswick	10,336	11,979	10,573	17,118	10,263
Quebec	187,855	197,898	212,982	195,686	183,528
Ontario	379,403	389,616	427,215	402,121	325,986
Manitoba	154,392	162,309	114,155	84,458	162,432
Saskatchewan	354,896	462,095	409,240	207,954	489,550
Alberta	282,953	363,456	279,616	244,421	300,703
British Columbia	83,059	96,394	78,609	85,629	97,296

¹ Includes estimated rental value of farm homes, supplementary payments made under the provisions of the Prairie Farm Assistance Act and payments under the Western Grain Producers' Acreage Payment Regulations.

11.4 Acreages, yields and prices of principal field crops, 1968-71, with average for 1963-67

Crop and year	Area '000 acres	Yield per acre	Production '000 bu	Average price \$ per bu	Total value ¹ \$ '000
Wheat					
Av. 1963-67	29,076	23.3	678,779	1.69	1,145,512
1968	29,422	22.1	649,844	1.34	872,581
1969	24,968	27.4	684,276	1.27	869,188
1970	12,484	26.6	331,519	1.24	411,169
1971	19,407	27.3	529,552	²	²
Oats					
Av. 1963-67	8,209	45.6	374,344	0.70	261,224
1968	7,556	48.0	362,516	0.60	216,340
1969	7,655	48.5	371,387	0.59	218,584
1970	7,149	51.5	367,850	0.52	191,795
1971	6,831	53.2	363,479	²	²
Barley					
Av. 1963-67	6,674	34.7	231,579	0.98	226,867
1968	8,836	36.8	325,373	0.81	265,148
1969	9,535	39.7	378,383	0.66	251,334
1970	10,043	41.4	415,704	0.71	293,544
1971	13,980	43.0	601,628	²	²
Rye					
Av. 1963-67	721	20.3	14,628	1.09	15,942
1968	679	19.2	13,049	1.03	13,406
1969	927	17.8	16,493	0.89	14,670
1970	1,015	22.1	22,427	0.85	18,995
1971	957	22.9	21,915	²	²
Mixed grains					
Av. 1963-67	1,615	47.1	76,112	0.90	68,250
1968	1,667	51.4	85,602	0.85	73,094
1969	1,740	50.2	87,346	0.81	70,808
1970	1,940	50.8	98,573	0.84	82,431
1971	2,055	52.1	107,078	²	²
Flaxseed					
Av. 1963-67	1,783	11.4	20,399	2.83	57,799
1968	1,524	12.9	19,666	2.88	56,594
1969	2,341	11.8	27,548	2.57	70,757
1970	3,368	14.5	48,932	2.27	111,079
1971	1,763	12.7	22,321	²	²
Potatoes					
Av. 1963-67	296	cwt 162.6	48,120	\$ per cwt 2.08	100,208
1968	303	174.4	52,883	1.63	86,037
1969	306	169.3	51,859	2.26	117,390
1970	320	170.5	55,138	2.10	116,001
1971	268	181.8	48,810	²	²
Tame hay					
Av. 1963-67	12,802	ton 1.84	23,554	\$ per ton 18.28	430,464
1968	12,438	1.85	23,034	18.50	426,134
1969	12,606	2.03	25,577	18.24	466,423
1970	13,620	2.08	28,266	18.69	528,213
1971	12,354	2.00	24,732	²	²

¹ Gross value of farm production; does not represent cash income from sales.

² Not available at time of going to press; will be published in Statistics Canada *Quarterly bulletin of agricultural statistics*, Cat. No. 21-003.

11.5 Acreages, production and values of field crops, by province, 1970 and 1971

Field crop and province	Area '000 acres		Total production		Gross farm value ¹ 1970 \$'000
	1970	1971	1970	1971	
WHEAT	<i>12,484</i>	<i>19,407</i>	<i>331,519</i>	<i>529,552</i>	<i>411,169</i>
Prince Edward Island	4	7	125	249	194
Nova Scotia	4	5	190	187	285
New Brunswick	3	6	100	216	146
Quebec	29	39	750	1,071	1,252
Ontario					
Winter	355	341	15,584	14,083	26,493
Spring	9	15	270	432	459
Manitoba	1,400	2,519	30,500	74,000	36,600
Saskatchewan	8,000	12,923	210,000	345,000	258,300
Alberta	2,600	3,443	72,000	91,000	84,960
British Columbia	80	109	2,000	3,314	2,480
OATS	<i>7,149</i>	<i>6,831</i>	<i>367,850</i>	<i>363,479</i>	<i>191,795</i>
Prince Edward Island	65	50	2,938	2,455	2,204
Nova Scotia	24	18	1,106	739	940
New Brunswick	65	51	2,561	2,309	1,921
Quebec	925	695	34,595	29,607	27,676
Ontario	750	612	43,650	35,190	33,174
Manitoba	1,260	1,395	53,000	76,000	24,380
Saskatchewan	1,950	1,966	110,000	111,000	48,400
Alberta	2,050	1,954	117,000	101,000	51,480
British Columbia	60	90	3,000	5,179	1,620
BARLEY	<i>10,043</i>	<i>13,980</i>	<i>415,704</i>	<i>601,628</i>	<i>293,544</i>
Prince Edward Island	20	32	744	1,236	789
Nova Scotia	6	9	282	327	333
New Brunswick	7	8	260	300	281
Quebec	24	38	865	1,532	1,021
Ontario	335	386	17,353	20,844	17,874
Manitoba	1,500	2,052	51,000	94,000	35,190
Saskatchewan	3,300	5,571	142,000	252,000	106,500
Alberta	4,700	5,689	198,000	224,000	126,720
British Columbia	150	196	5,200	7,389	4,836
FALL RYE	<i>876</i>	<i>906</i>	<i>19,800</i>	<i>21,005</i>	<i>16,775</i>
Quebec	4	2	94	45	108
Ontario	62	48	1,736	1,293	1,753
Manitoba	190	127	4,100	3,250	3,444
Saskatchewan	460	502	10,100	10,800	8,080
Alberta	155	226	3,600	5,560	3,240
British Columbia	4	1	170	57	150
SPRING RYE	<i>139</i>	<i>51</i>	<i>2,627</i>	<i>910</i>	<i>2,220</i>
Manitoba	4	2	77	30	65
Saskatchewan	75	26	1,400	440	1,120
Alberta	60	24	1,150	440	1,035
ALL RYE	<i>1,015</i>	<i>957</i>	<i>22,427</i>	<i>21,915</i>	<i>18,995</i>
Quebec	4	2	94	45	108
Ontario	62	48	1,736	1,293	1,753
Manitoba	194	128	4,177	3,280	3,509
Saskatchewan	535	528	11,500	11,240	9,200
Alberta	215	250	4,750	6,000	4,275
British Columbia	4	1	170	57	150
PEAS	<i>86</i>	<i>81</i>	<i>1,631</i>	<i>1,927</i>	<i>3,374</i>
Quebec	1	1	28	14	105
Ontario	2	2	34	27	102
Manitoba	60	51	1,020	1,200	1,785
Saskatchewan	2	8	56	170	115
Alberta	18	18	440	430	1,166
British Columbia	3	2	53	86	101
BEANS	<i>82</i>	<i>113</i>	<i>1,857</i>	<i>2,911</i>	<i>10,539</i>
Quebec	1	1	18	21	57
Ontario	81	112	1,839	2,890	10,482
SOYBEANS	<i>335</i>	<i>367</i>	<i>10,385</i>	<i>10,276</i>	<i>28,455</i>
Ontario	335	367	10,385	10,276	28,455
BUCKWHEAT	<i>152</i>	<i>113</i>	<i>2,833</i>	<i>2,395</i>	<i>3,923</i>
New Brunswick	4	2	118	62	135
Quebec	13	10	290	266	360
Ontario	10	10	240	267	302
Manitoba	80	80	1,400	1,600	2,030
Saskatchewan	25	12	425	200	574
Alberta	20	—	360	—	522
MIXED GRAINS	<i>1,940</i>	<i>2,055</i>	<i>98,573</i>	<i>107,078</i>	<i>82,431</i>
Prince Edward Island	64	71	2,848	3,384	2,478
Nova Scotia	11	8	508	366	483
New Brunswick	10	9	380	410	327
Quebec	95	123	3,544	5,252	4,182
Ontario	880	928	53,328	56,608	47,995
Manitoba	250	284	9,200	13,500	7,360
Saskatchewan	175	205	7,500	9,200	5,250
Alberta	450	419	21,000	18,000	14,070
British Columbia	6	7	265	358	286

11.5 Acreages, production and values of field crops, by province, 1970 and 1971 (concluded)

Field crop and province	Area '000 acres		Total production		Gross farm value ¹ 1970 \$'000
	1970	1971	1970	1971	
			'000 bu	'000 bu	
FLAXSEED	3,368	1,763	48,932	22,321	111,079
Quebec	16	—	194	—	586
Ontario	2	1	34	21	91
Manitoba	1,150	566	12,500	5,900	28,125
Saskatchewan	1,500	925	24,800	12,900	56,048
Alberta	700	271	11,400	3,500	26,220
British Columbia	..	—	..	—	..
RAPESEED	4,050	5,306	72,200	95,000	165,235
Manitoba	400	581	7,200	12,000	16,920
Saskatchewan	2,200	2,737	39,500	51,000	89,665
Alberta	1,450	1,988	25,500	32,000	58,650
			'000 lb.	'000 lb.	
SUNFLOWER SEED	70	239	55,350	169,070	3,227
Manitoba	65	155	52,000	116,250	3,120
Saskatchewan	3	71	1,950	46,020	58
Alberta	2	14	1,400	6,800	49
MUSTARD SEED	200	206	187,900	185,600	5,941
Manitoba	25	10	21,000	8,200	735
Saskatchewan	120	152	118,200	144,400	3,842
Alberta	55	44	48,700	33,000	1,364
			'000 bu	'000 bu	
SHELLED CORN	1,197	1,410	100,925	115,977	135,713
Quebec	93	138	7,285	13,234	10,199
Ontario	1,100	1,263	93,500	102,303	125,290
Manitoba	4	9	140	440	224
			'000 cwt	'000 cwt	
POTATOES	320	268	55,138	48,810	116,001
Prince Edward Island	55	47	10,252	9,332	16,198
Nova Scotia	5	4	697	560	1,450
New Brunswick	61	59	13,118	13,971	18,759
Quebec	67	48	8,140	6,412	19,129
Ontario	48	40	10,331	7,972	29,650
Manitoba	33	33	3,700	4,100	6,771
Saskatchewan	9	3	900	330	2,250
Alberta	32	26	5,700	4,000	14,250
British Columbia	11	9	2,300	2,133	7,544
			'000 tons	'000 tons	
FIELD ROOTS	10	10	126	133	4,135
Prince Edward Island	1	1	13	9	242
Nova Scotia	1	2	10	6	355
New Brunswick	1	2	7	4	206
Quebec	3	4	35	44	770
Ontario	4	5	61	70	2,562
TAME HAY	13,620	12,354	28,266	24,732	528,213
Prince Edward Island	180	128	351	269	5,265
Nova Scotia	202	153	368	337	7,176
New Brunswick	228	164	433	328	8,010
Quebec	3,350	2,699	6,934	5,587	126,892
Ontario	3,000	2,707	7,650	6,551	130,050
Manitoba	1,160	1,084	2,230	2,100	36,795
Saskatchewan	1,600	1,646	2,800	2,500	54,600
Alberta	3,400	3,260	6,200	5,500	124,000
British Columbia	500	513	1,300	1,560	35,425
FODDER CORN	701	770	9,496	10,450	62,999
Quebec	100	131	1,280	1,771	11,520
Ontario	565	616	7,854	8,378	48,381
Manitoba	20	10	120	70	840
Saskatchewan	4	—	12	—	84
British Columbia	12	13	230	231	2,174
SUGAR BEETS	69	81	917	1,216	9,811
Quebec	9	8	177	169	2,304
Ontario	—	—	—	—	—
Manitoba	23	31	216	363	2,010
Alberta	37	42	524	684	5,497

¹ Values for 1971 not available at time of going to press; see footnote 2, Table 11.4.² Less than 500 acres.

11.6 Acreages and production of grain in the Prairie Provinces, 1967-71

Grain	1967	1968	1969	1970	1971
ACREAGES ('000 acres)					
Wheat	29,570	28,860	24,400	12,000	18,885
Oats	5,090	5,340	5,630	5,260	5,315
Barley	7,600	8,330	9,000	9,500	13,312
Rye	628	619	859	944	906
Flaxseed	998	1,502	2,320	3,350	1,762
Rapeseed	1,620	1,052	2,012	4,050	5,306
PRODUCTION ('000 bu)					
Wheat	574,000	629,000	665,000	312,500	510,000
Oats	195,000	249,000	278,000	280,000	288,000
Barley	230,000	301,000	355,000	391,000	570,000
Rye	10,467	11,400	14,658	20,427	20,520
Flaxseed	9,000	19,300	27,300	48,700	22,300
Rapeseed	24,700	19,400	33,400	72,200	95,000

11.7 Carryover of Canadian grain, ten-year average 1959-68 and crop years ended July 31, 1969-71 (thousand bushels)

Grain and year	Total in Canada and United States	Total in Canada	In commercial storage in Canada	On farms in Canada	Prairie Provinces	
					On farms	In country elevators
Wheat						
Av. 1959-68	529,868	529,852	393,066	136,786	134,210	221,440
1969	851,828	851,828	479,628	372,200	370,000	286,226
1970	1,008,690	1,008,690	465,990	542,700	540,000	291,158
1971	744,154	734,154	339,334	394,820	392,000	212,181
Oats						
Av. 1959-68	119,874	119,874	33,823	86,050	64,900	22,047
1969	128,657	128,657	34,157	94,500	80,000	18,277
1970	141,340	141,340	18,340	123,000	106,000	9,983
1971	125,373	125,373	34,223	91,150	75,000	23,568
Barley						
Av. 1959-68	108,672	108,642	57,399	51,243	48,800	38,131
1969	199,383	199,383	60,883	138,500	134,000	41,547
1970	200,078	200,078	78,078	122,000	115,000	39,963
1971	144,269	144,269	82,619	61,650	55,000	53,138
Rye						
Av. 1959-68	7,241	6,945	4,732	2,213	2,138	2,054
1969	8,673	8,673	3,673	5,000	5,000	1,651
1970	10,647	10,332	5,632	4,700	4,700	2,216
1971	12,743	12,601	7,401	5,200	5,200	3,705
Flaxseed						
Av. 1959-68	6,953	6,953	5,711	1,242	1,235	1,855
1969	4,909	4,909	4,109	800	800	1,497
1970	5,970	5,970	5,370	600	600	2,899
1971	26,606	26,606	16,106	10,500	10,500	6,951

11.8 Livestock slaughtered at inspected establishments, 1967-71

Year	Cattle	Calves	Sheep	Pigs
1967	2,641,788	738,815	325,468	7,336,912
1968	2,784,379	668,411	282,632	7,423,754
1969	2,718,567	580,148	212,751	6,973,190
1970	2,700,833	499,162	181,332	8,280,481
1971	2,786,908	464,240	205,082	9,742,759

11.9 Number and value of poultry on farms, by province, as at June 1, 1971 and 1972

Province and year	Hens and chickens		Turkeys		Geese		Ducks		All poultry	
	No. '000	Value \$'000	No. '000	Value \$'000	No. '000	Value \$'000	No. '000	Value \$'000	No. '000	Value \$'000
Prince Edward Island	1971 269	362	1	5	5	24	2	6	277	397
	1972 254	361	1	4	6	28	3	8	264	401
Nova Scotia	1971 3,056	4,251	70	330	2	10	2	5	3,130	4,596
	1972 2,937	4,094	67	342	2	12	2	6	3,008	4,454
New Brunswick	1971 1,762	2,277	33	162	1	5	1	3	1,797	2,447
	1972 1,815	2,617	35	186	1	5	1	2	1,852	2,810
Quebec	1971 22,930	24,961	2,410	11,012	6	24	69	160	25,415	36,157
	1972 23,510	26,216	2,190	10,797	6	24	81	182	25,787	37,219
Ontario	1971 31,510	42,599	3,765	16,944	73	290	155	388	35,503	60,221
	1972 31,800	40,053	3,790	13,682	75	322	185	468	35,850	54,525
Manitoba	1971 7,476	8,015	1,033	4,257	197	666	107	233	8,813	13,171
	1972 7,530	8,726	1,000	4,710	195	780	90	219	8,815	14,435
Saskatchewan	1971 5,991	6,894	526	2,306	44	177	86	206	6,647	9,583
	1972 5,880	7,324	495	2,317	40	165	80	208	6,495	10,014

11.9 Number and value of poultry on farms, by province, as at June 1, 1971 and 1972 (concluded)

Province and year		Hens and chickens		Turkeys		Geese		Ducks		All poultry	
		No. '000	Value \$'000	No. '000	Value \$'000	No. '000	Value \$'000	No. '000	Value \$'000	No. '000	Value \$'000
Alberta	1971	9,138	10,358	896	4,365	78	311	112	279	10,224	15,313
	1972	9,045	11,463	825	4,274	75	324	120	316	10,065	16,377
British Columbia	1971	7,861	10,500	805	4,058	9	44	19	47	8,694	14,649
	1972	8,275	12,555	660	3,808	9	43	19	51	8,963	16,457
Total	1971	89,992	110,217	9,541	43,439	415	1,551	554	1,327	100,500	156,534
	1972	91,046	113,409	9,063	40,120	409	1,703	581	1,460	101,099	156,692

11.10 Production and domestic disappearance of poultry meat¹, 1970 and 1971

Year and item		Net production '000 lb.	Total supply '000 lb.	Domestic disappearance '000 lb.	Per capita consumption lb.
1970					
Fowl and chickens		745,761	772,564	733,670	34.3
Turkeys		225,307	252,129	214,707	10.0
Geese		3,661	3,896	3,503	0.2
Ducks		5,432	7,236	6,570	0.3
Total		980,161	1,035,825	958,450	44.8
1971					
Fowl and chickens		708,232	746,453	713,512	32.9
Turkeys		225,832	258,532	223,686	10.3
Geese		3,893	4,285	4,146	0.2
Ducks		6,555	8,586	7,980	0.4
Total		944,512	1,017,856	949,324	43.8

¹ Eviscerated weight.**11.11 Production and utilization of milk, by province, 1970 and 1971 (thousand pounds)**

Province and year		Milk used in manufacture		Milk otherwise used			Total milk production
		On farms ¹	In factories	Fluid sales ²	Farm-home consumed	Fed on farms	
Prince Edward Island	1970	562	161,799	19,334	17,480	6,988	206,163
	1971	562	153,812	20,468	16,440	6,892	198,174
Nova Scotia	1970	2,597	115,024	203,164	20,210	9,823	350,824
	1971	2,106	108,002	211,270	18,150	9,253	348,781
New Brunswick	1970	3,136	109,701	132,834	18,980	7,843	272,494
	1971	2,457	95,626	135,540	16,720	7,386	257,729
Quebec	1970	6,458	5,213,399	1,345,816	196,000	182,260	6,943,933
	1971	6,037	5,065,771	1,355,536	185,600	180,260	6,797,204
Ontario	1970	6,014	3,866,457	2,126,358	172,400	249,000	6,420,229
	1971	5,288	3,587,119	2,144,080	169,400	244,300	6,150,187
Manitoba	1970	5,195	462,420	237,041	71,490	49,210	825,356
	1971	4,189	436,883	240,216	65,400	48,950	795,638
Saskatchewan	1970	18,743	407,025	186,163	148,000	55,470	815,401
	1971	18,018	374,184	188,839	144,400	56,790	782,231
Alberta	1970	19,867	900,080	386,715	127,400	94,780	1,528,842
	1971	17,667	848,314	395,016	120,190	93,610	1,474,797
British Columbia	1970	2,480	336,080	562,877	20,330	27,590	949,357
	1971	1,802	345,006	579,679	18,510	27,220	972,217
Total	1970	65,052	11,571,985	5,200,302	792,290	682,970	18,312,599
	1971	58,126	11,014,717	5,274,644	754,810	674,661	17,776,958

¹ Used in farm butter only.² Represents milk and cream, in milk equivalent, sold off farms for fluid purposes.**11.12 Farm values of milk production, by province, 1970 and 1971 (thousand dollars)**

Province and year		Value of milk used in manufacture		Value of milk otherwise used			Value of total milk production
		On farms ¹	In factories	Fluid sales ²	Farm-home consumed	Fed on farms ³	
Prince Edward Island	1970	15	4,421	1,127	552	792	6,907
	1971	15	4,628	1,193	531	726	7,089 ⁴
Nova Scotia	1970	68	3,309	13,879	635	460	18,351
	1971	55	3,285	15,089	577	399	19,405
New Brunswick	1970	87	2,735	8,046	607	629	12,104
	1971	67	2,469	8,440	542	559	12,077
Quebec	1970	182	174,236	78,097	6,723	10,001	268,480 ⁴
	1971	173	188,609	81,921	6,979	9,517	277,957 ⁴
Ontario	1970	157	126,026	128,229	5,741	11,759	271,407 ⁴
	1971	142	135,066	134,806	6,437	12,436	283,174 ⁴
Manitoba	1970	142	10,869	13,017	1,887	2,791	28,706
	1971	113	11,043	13,124	1,759	2,609	28,648
Saskatchewan	1970	489	9,284	10,596	4,055	3,146	27,570
	1971	470	9,233	10,669	4,231	3,141	27,744

11.12 Farm values of milk production, by province, 1970 and 1971 (thousand dollars) (concluded)

Province and year	Value of milk used in manufacture		Value of milk otherwise used			Value of total milk production
	On farms ¹	In factories	Fluid sales ²	Farm-home consumed	Fed on farms ³	
Alberta	1970 526	24,395	21,109	4,319	6,017	56,366
	1971 468	24,380	22,353	4,159	5,724	57,284
British Columbia	1970 65	10,625	40,028	701	1,060	52,479
	1971 47	11,551	41,703	685	1,127	55,113
Total	1970 1,731	365,900	314,128	25,220	36,655	742,379 ⁴
	1971 1,550	390,464	329,298	25,900	36,238	768,491 ⁴

¹ Used in farm butter only.² Represents the value of milk and cream sold off farms for fluid purposes.³ Includes values of skim milk and buttermilk retained on farms.⁴ Represents the market price less levies on manufacturing milk collected under provincial authority. Levies by category of milk are not available, therefore cash receipts are not additive.**11.13 Production of butter and cheese, by province, 1970 and 1971 (thousand pounds)**

Province and year	Butter				Cheese Factory ¹
	Creamery	Dairy	Whey	Total	
Prince Edward Island	1970 4,446	24	64	4,534	1,883
	1971 3,911	24	64	3,999	2,119
Nova Scotia	1970 2,404	111	—	2,515	1,433
	1971 1,954	90	—	2,044	1,588
New Brunswick	1970 3,521	134	—	3,655	410
	1971 2,993	105	—	3,098	442
Quebec	1970 158,833	276	2,797	161,906	93,004
	1971 136,593	258	3,279	140,130	121,549
Ontario	1970 92,163	257	3,222	95,642	107,925
	1971 80,192	226	3,635	84,053	108,534
Manitoba	1970 15,652	222	—	15,874	4,230
	1971 13,723	179	—	13,902	5,824
Saskatchewan	1970 16,674	801	—	17,475	—
	1971 15,279	770	—	16,049	—
Alberta	1970 29,311	849	9	30,169	3,507
	1971 27,025	755	10	27,790	3,768
British Columbia	1970 4,789	106	—	4,895	1,993
	1971 5,142	77	—	5,219	2,524
Total	1970 327,793	2,780	6,092	336,665	215,279 ²
	1971 286,812	2,484	6,988	296,284	247,914 ²

¹ Factory-made cheese includes cheddar and other cheese made from whole milk and cream.² Amounts for "other cheese" are included in Quebec, Ontario and Alberta figures, but, as fewer than three firms reported in the other provinces, data cannot be included except in the Canada total.**11.14 Domestic disappearance of dairy products, 1969-71**

Product	1969		1970		1971	
	Total '000 lb.	Per capita ¹ lb.	Total '000 lb.	Per capita ¹ lb.	Total '000 lb.	Per capita ¹ lb.
Milk and cream	5,906,191	287.06	5,992,592	286.91	6,029,454	286.82
Milk	5,033,849	244.66	5,127,146	245.47	5,153,522	245.15
Cream as milk	872,342	42.40	865,446	41.44	875,932	41.67
Butter	331,275	15.71	336,725	15.73	338,320	15.70
Creamery	322,607	15.30	327,873	15.32	328,789	15.26
Dairy	2,869	0.14	2,780	0.13	2,484	0.11
Whey	5,799	0.27	6,072	0.28	7,047	0.33
Cheese	236,729	11.23	253,717	11.85	273,036	12.67
Cheddar	75,722	3.59	88,280	4.12	89,763	4.17
Process	96,727	4.59	95,707	4.47	102,199	4.74
Other	64,280	3.05	69,730	3.26	81,074	3.76
Concentrated whole milk products ²	308,663	14.64	293,214	13.70	291,309	13.53
Evaporated	267,831	12.70	258,547	12.08	255,339	11.85
Condensed	21,189	1.00	16,653	0.78	16,046	0.74
Powdered	2,892	0.14	1,016	0.05	1,718	0.08
Concentrated milk by-products ³	310,546	14.72	233,368	10.90	219,507	10.19
Evaporated	13,774	0.65	13,067	0.61	16,963	0.79
Condensed	1,456	0.07	1,398	0.07	1,658	0.08
Powdered	212,182	10.06	133,002	6.21	108,850	5.05
All dairy products in terms of milk						
Butter	7,616,139	361.14	7,737,280	361.45	7,751,788	359.76
Cheese	2,316,801	109.86	2,511,600	117.33	2,705,873	125.58
Concentrated	713,418	33.83	665,539	31.09	662,949	30.77
Total ⁴	17,349,067	829.66	17,741,890	835.78	17,999,057	842.33

¹ Includes Newfoundland for all manufactured dairy products.² Includes, in addition to the items listed, malted milk, cream powder, partly skimmed evaporated milk, whole milk powder of less than 26% fat, formula milks, evaporated milk of 2% fat, and concentrated liquid milk.³ Includes, in addition to the items listed, condensed buttermilk, powdered buttermilk, sugar of milk, casein, powdered whey, special formula skim milk products, lactalbumin and concentrated liquid skim milk. Since the quantities used for human consumption and livestock feeding cannot be separated, per capita figures include both.⁴ Includes ice cream mix in terms of milk.

11.15 Estimated commercial production and farm value of fruit, 1969-71

Kind of fruit and year	Quantity	Weight '000 lb.	Farm value \$'000	Kind of fruit and year	Quantity	Weight '000 lb.	Farm value \$'000
Apples	'000 bu			Peaches	'000 bu		
1969	22,739	955,038	31,521	1969	1,660	83,000	8,935
1970	21,286	894,012	30,453	1970	2,197	109,850	9,863
1971	20,532	862,344	26,590	1971	2,517	125,850	11,166
Apricots				Pears			
1969	2	100	11	1969	1,019	50,950	3,312
1970	152	7,600	546	1970	1,659	82,950	5,241
1971	133	6,650	443	1971	1,813	90,650	4,902
Cherries (sour)				Plums and prunes			
1969	411	20,550	2,287	1969	299	14,950	1,238
1970	329	16,450	1,850	1970	396	19,800	1,629
1971	438	21,900	2,865	1971	442	22,100	1,576
Cherries (sweet)				Raspberries	'000 qt		
1969	312	15,600	2,609	1969	11,489	16,663	5,079
1970	348	17,400	3,203	1970	9,322	13,454	3,499
1971	463	23,150	3,665	1971	8,875	12,822	3,667
Strawberries	'000 qt			Grapes	'000 lb.		
1969	28,078	33,812	8,167	1969	124,218	124,218	9,216
1970	32,359	43,060	9,754	1970	144,497	144,497	10,967
1971	34,092	44,898	9,469	1971	174,626	174,626	14,041
Loganberries	'000 lb.			Blueberries			
1969	1,216	1,216	238	1969	28,700	28,700	4,886
1970	1,259	1,259	254	1970	28,570	28,570	6,136
1971	855	855	184	1971	22,471	22,471	3,831

11.16 Estimated commercial acreage and production of vegetables, 1969-71, with average for 1964-68

Vegetable	Average 1964-68		1969		1970		1971	
	Area acres	Production '000 lb.	Area acres	Production '000 lb.	Area acres	Production '000 lb.	Area acres	Production '000 lb.
Asparagus	3,630	5,440	2,960	5,239	3,160	5,890	3,190	5,809
Beans	25,880	100,370	22,480	89,416	24,450	100,712	21,930	100,038
Beets	2,800	48,950	2,790	46,111	3,070	50,290	3,300	57,562
Cabbage	7,030	139,860	7,010	138,539	7,220	153,668	7,200	156,973
Carrots	14,680	362,750	16,300	395,623	18,410	464,529	19,260	419,084
Cauliflower	3,270	35,150	4,030	42,635	4,220	47,317	3,810	41,495
Celery	1,080	40,490	1,040	37,312	1,110	45,445	1,010	44,478
Corn	56,960	431,680	57,630	395,474	62,260	460,830	65,700	511,311
Cucumbers	11,010	93,490	10,440	130,604	11,080	150,638	10,490	133,918
Lettuce	4,930	56,490	5,030	52,475	5,000	60,043	5,260	73,917
Onions	9,610	241,290	10,090	226,060	10,200	254,952	9,190	234,717
Parsnips	570	11,080	560	9,343	520	8,152	610	10,601
Peas	56,280	144,630	51,270	123,920	49,530	133,084	47,120	123,080
Spinach	1,030	10,280	980	6,057	950	7,407	930	7,843
Tomatoes	32,590	788,690	28,300	568,510	28,620	838,065	28,110	831,497
Turnips	9,510	237,160	7,750	170,302	8,630	216,093	6,740	162,455

11.17 Production, utilization and value of farm eggs, by province, 1970 and 1971

Province	1970				1971			
	Average number of layers '000	Average production per 100 layers No.	Net eggs laid ¹ '000 doz	Total value (sold and used) \$'000	Average number of layers '000	Average production per 100 layers No.	Net eggs laid ¹ '000 doz	Total value (sold and used) \$'000
Newfoundland	515	21,359	9,147	4,335	540	21,252	9,551	4,589
Prince Edward Island	188	19,810	3,102	1,243	182	19,896	3,016	1,114
Nova Scotia	1,120	21,536	20,095	8,286	989	21,199	17,441	5,906
New Brunswick	489	29,743	8,459	3,977	480	21,467	8,579	3,745
Quebec	4,715	20,085	78,885	34,201	4,677	20,532	80,026	30,616
Ontario	10,612	21,244	187,659	67,234	11,028	21,124	193,985	57,596
Manitoba	3,440	21,135	60,534	18,161	3,272	21,067	57,451	13,714
Saskatchewan	1,550	19,631	25,329	8,810	1,602	19,729	26,335	8,679
Alberta	2,698	19,575	43,879	16,257	2,726	19,323	43,896	15,773
British Columbia	3,176	22,121	58,561	23,187	3,179	22,287	59,045	23,152
Total	28,506	20,888	495,650	185,691	28,676	20,902	499,325	164,884

¹ Total laid less loss.

11.18 Honey production, by province, and total value, 1969-71, with average for 1964-68

Province		Average 1964-68	1969	1970	1971
Prince Edward Island	'000 lb.	47	34	28	33
Nova Scotia	"	225	214	201	235
New Brunswick	"	106	129	129	190
Quebec	"	2,742	3,501	2,548	2,540
Ontario	"	9,199	8,986	7,636	7,245
Manitoba	"	6,824	9,250	9,300	7,500
Saskatchewan	"	6,027	8,668	7,611	7,998
Alberta	"	14,128	20,280	20,240	21,120
British Columbia	"	2,578	2,250	3,348	3,735
Total production	'000 lb.	41,876	53,312	51,041	50,596
Total value	\$'000	7,467	8,817	8,269	9,879

11.19 Acreage, yield and value of sugar beets and quantity and value of beet sugar shipments, 1967-71

Year	Sugar beets						Beet sugar (all types)	
	Harvested area acres	Yield per acre tons	Total yield tons	Average price per ton \$	Total farm value \$'000		Shipments '000 lb.	Value \$'000
1967	83,305	12.98	1,081,082	16.70	18,054		303,076	21,172
1968	79,666	13.79	1,098,221	17.23	18,923		287,053	20,100
1969	79,227	13.61	1,078,221	17.59	18,970		242,819	20,480
1970	68,771	13.33	916,906	16.13	14,789		253,161	23,320
1971	81,096	14.99	1,215,917	18.27	22,215		244,371	24,902

11.20 Production and value of maple sugar and maple syrup, by province, 1969-71, with average for 1964-68

Province and year	Maple sugar		Maple syrup			Total value, sugar and syrup \$
	Quantity <i>lb.</i>	Value \$	Quantity <i>gal</i>	Average price per gal \$	Value \$	
Nova Scotia						
Av. 1964-68	7,006	5,600	4,014	6.93	27,800	33,400
1969	9,012	7,000	3,658	7.38	27,000	34,000
1970	13,827	12,000	4,777	8.16	39,000	51,000
1971	16,200	16,000	4,548	7.92	36,000	52,000
New Brunswick						
Av. 1964-68	27,062	23,000	8,764	6.39	56,000	79,000
1969	21,110	21,000	8,840	7.35	65,000	86,000
1970	28,297	29,000	7,860	7.25	57,000	86,000
1971	15,736	15,000	7,634	7.86	60,000	75,000
Quebec						
Av. 1964-68	418,600	247,000	2,174,800	4.20	9,134,000	9,381,000
1969	326,000	212,000	1,678,000	4.25	7,132,000	7,344,000
1970	302,000	205,000	1,436,000	4.77	6,850,000	7,055,000
1971	241,000	183,000	1,164,000	5.60	6,518,000	6,701,000
Ontario						
Av. 1964-68	12,338	11,200	221,076	5.89	1,303,200	1,314,400
1969	7,624	9,000	191,446	6.68	1,279,000	1,288,000
1970	17,475	20,000	181,947	6.83	1,243,000	1,263,000
1971	14,658	18,000	147,625	7.18	1,060,000	1,078,000
Total						
Av. 1964-68	465,006	286,800	2,408,654	4.37	10,521,000	10,807,800
1969	363,746	249,000	1,881,944	4.52	8,503,000	8,752,000
1970	361,599	266,000	1,630,584	5.02	8,189,000	8,455,000
1971	287,594	232,000	1,323,807	5.80	7,674,000	7,906,000

11.21 Acreage, production and value of the commercial crop of leaf tobacco, by province, 1969-71

Year	Quebec			Ontario			Other provinces		
	Har- vested area acres	Pro- duction '000 lb.	Value \$'000	Har- vested area acres	Pro- duction '000 lb.	Value \$'000	Har- vested area acres	Pro- duction '000 lb.	Value \$'000
1969	9,448	13,100	7,959	120,130	230,340	152,419	3,174	4,025	2,547
1970	9,861	14,624	8,293	93,888	202,301	131,481	4,464	4,938	3,141
1971	10,057	14,980	8,157	82,626	204,624	132,579	4,856	4,808	3,029

11.22 Acreage, production and value of the commercial crop of leaf tobacco, by main type, 1969-71

Type of tobacco and year		Harvested area <i>acres</i>	Average yield per acre <i>lb.</i>	Total production '000 <i>lb.</i>	Average farm price per lb. <i>¢</i>	Gross farm value <i>\$'000</i>
Flue-cured	1969	127,762	1,879	240,105	66.4	159,466
	1970	103,620	2,067	214,139	65.2	139,546
	1971	93,233	2,330	217,262	64.8	140,850
Burley	1969	2,120	1,686	3,574	55.9	1,999
	1970	1,276	2,136	2,726	54.9	1,499
	1971	921	2,242	2,065	50.3	1,038
Cigar leaf	1969	1,968	1,395	2,745	35.0	970
	1970	2,617	1,534	4,014	35.0	1,405
	1971	2,550	1,500	3,825	34.0	1,300
Total ¹	1969	132,752	1,864	247,465	65.8	162,925
	1970	108,213	2,050	221,863	64.4	142,915
	1971	97,539	2,301	224,412	64.1	143,765

¹ Includes other types not specified.

11.23 Average index¹ numbers of farm prices of agricultural products, by province, 1967-71 (1961 = 100)

Province	1967	1968	1969	1970	1971
Prince Edward Island	115.0	123.2	123.6	149.2	131.7
Nova Scotia	110.9	114.0	122.7	123.4	121.1
New Brunswick	111.4	116.9	116.8	135.5	122.9
Quebec	125.2	126.0	131.0	129.0	134.2
Ontario	123.0	124.0	130.7	128.4	128.6
Manitoba	109.5	105.2	104.4	103.0	100.5
Saskatchewan	106.9	99.1	96.3	97.3	94.4
Alberta	113.9	109.6	112.5	110.7	109.0
British Columbia	111.6	118.7	124.6	121.6	123.7
Total	116.0	114.0	116.8	116.0	115.4

¹ A description of this index, its coverage and the methods used will be found in Statistics Canada *Quarterly bulletin of agricultural statistics* (Cat. No. 21-003) for July–September 1969.

11.24 Average cash prices per bushel of major Canadian grains, crop years ended July 31, 1967-71 (basis, in store Thunder Bay)

Year	Averages in cents and eighths per bushel				
	Wheat ^{1,2} No. 1 N.	Oats ¹ No. 2 C.W.	Barley ¹ No. 3 C.W. — 6 row	Rye ³ No. 2 C.W.	Flaxseed ³ No. 1 C.W.
1967	211/6	92/5	137/1	133/1	300/2
1968	194/3	95/2	130/5	128/2	345/5
1969	194/7	85/4	119/6	124/3	330/6
1970	180/7	73/2	112/2	108/3	292
1971	179/2	83/2	130/7	109/3	253/5

¹ Canadian Wheat Board daily fixed prices.

² International Grains Arrangement, effective July 1, 1968.

³ Winnipeg Grain Exchange daily closing cash quotations.

11.25 Yearly average prices per 100 lb. of Canadian livestock at principal markets, 1968-71 (dollars)

Item	1968	1969	1970	1971	1968	1969	1970	1971
	Toronto				Montreal			
Steers, good	26.90	29.35	30.40	32.70	27.20	29.65	30.75	32.23
Steers, medium	25.00	27.61	28.55	30.34	25.60	27.85	28.70	30.33
Steers, common	21.12	24.87	25.99	26.76	22.71	25.15	25.41	26.23
Heifers, good	24.91	27.32	28.60	30.15	23.40	25.65	25.70	25.71
Heifers, medium	23.12	25.76	26.69	28.04	21.65	23.75	24.18	24.02
Cows, good	19.85	22.75	23.05	22.75	20.00	22.80	23.25	23.24
Cows, medium	18.40	21.07	21.47	21.47	17.22	20.10	20.64	20.58
Bulls	21.20	23.87	24.56	23.58	21.98	24.50	25.26	24.79
Feeder steers, good	28.45	31.60	33.95	34.15	1	1	1	35.00
Feeder steers, common	23.60	26.66	27.80	29.17	1	1	1	1
Calves, veal, good and choice	35.80	38.05	40.00	40.05	39.50	42.90	43.20	44.55
Calves, veal, common and medium	25.30	28.68	29.00	29.34	29.37	32.75	34.06	33.76
Pigs, grade B, dressed	29.80	35.70 ²	32.20 ²	25.80 ²	28.70	33.90 ²	33.12 ²	1
Lambs, good	29.65	32.80	33.65	30.65	25.65	29.30	28.80	30.55
Lambs, common	26.57	28.52	30.57	25.13	20.94	22.70	23.12	24.50
Sheep, good	11.37	14.26	14.40	14.07	12.81	14.50	13.23	11.65

**11.25 Yearly average prices per 100 lb. of Canadian livestock at principal markets, 1968-71 (dollars)
(concluded)**

Item	1968	1969	1970	1971	1968	1969	1970	1971
	Winnipeg				Edmonton			
Steers, good	26.85	29.10	30.20	32.40	24.90	27.65	29.20	31.15
Steers, medium	25.50	27.83	29.02	29.94	23.60	26.52	27.92	28.34
Steers, common	22.80	26.01	27.48	27.10	21.96	25.31	26.61	27.05
Heifers, good	24.53	27.50	28.09	28.90	23.43	26.00	27.20	28.39
Heifers, medium	23.08	25.38	27.06	27.35	21.69	24.47	26.06	26.99
Cows, good	19.55	23.95	23.45	23.10	17.60	21.15	21.20	21.00
Cows, medium	18.29	22.12	21.89	21.70	16.48	19.76	19.82	20.06
Bulls	21.45	24.71	25.20	25.00	19.75	22.82	24.27	23.85
Feeder steers, good	26.85	32.00	33.00	33.75	26.75	31.50	33.20	33.55
Feeder steers, common	23.50	27.58	28.71	29.20	22.90	26.74	29.34	29.48
Feeder cows and heifers, good	22.95	26.87	28.04	28.43	22.80	27.12	29.42	29.49
Feeder cows and heifers, common	19.44	23.84	24.26	24.23	19.71	24.04	24.52	24.68
Calves, veal, good and choice	37.90	42.05	46.70	47.10	30.35	39.65	43.05	44.00
Calves, veal, common and medium	30.29	32.70	37.44	36.81	23.67	27.62	28.64	28.98
Pigs, grade B, dressed	28.10	35.45 ²	29.20 ²	22.85 ²	26.50	33.30 ²	28.40 ²	21.25 ²
Lambs, good	26.30	30.75	28.65	27.15	22.05	26.10	25.29	23.70
Lambs, common	21.99	23.45	24.22	21.80	19.80	22.15	22.21	20.59
Sheep, good	6.75	7.91	9.51	8.76	7.67	8.49	11.25	10.66

¹ No sales reported.

² Pigs, Index 100, base price.

11.26 Per capita supplies of food moving into consumption 1970 and 1971, with average for 1965-69

Kind of food and weight base		Pounds per capita per annum			Percentages of 1965-69 average	
		Average 1965-69	1970	1971 ^D	1970	1971 ^D
CEREALS						
Wheat flour	retail wt	153.3	152.2	146.1	99.3	95.3
"	"	132.8	131.7	124.1	99.2	93.4
Rye flour and meal	"	0.8	0.8	0.8	100.0	100.0
Oatmeal and rolled oats	"	4.3	4.0	3.8	93.0	88.4
Pot and pearl barley	"	0.1	0.1	0.1	100.0	100.0
Corn flour and meal	"	3.7	4.1	4.0	110.8	108.1
Buckwheat flour	"	—	—	—	—	—
Rice	"	4.7	5.0	6.8	106.4	144.7
Breakfast food	"	6.9	6.5	6.5	94.2	94.2
SUGARS AND SYRUPS						
Sugar	sugar content	109.3	110.3	110.9	100.9	101.5
Maple sugar	refined wt	101.9	102.2	104.6	100.3	102.6
Honey	retail wt	0.5	0.2	0.2	40.0	40.0
Other	"	1.9	2.2	1.5	115.8	78.9
	"	8.8	10.1	8.0	114.8	90.9
PULSES AND NUTS						
Dry beans	retail wt	13.6	14.2	17.5	104.4	128.7
"	"	3.7	3.1	4.6	83.8	124.3
Dry peas	"	1.7	1.3	2.6	76.5	152.9
Peanuts	"	3.6	5.1	5.2	141.7	144.4
Tree nuts	"	1.2	1.3	1.5	108.3	125.0
Cocoa	green beans	3.4	3.4	3.6	100.0	105.9
OILS AND FATS						
Margarine	fat content	40.0	41.4	41.2	103.5	103.0
Lard	retail wt	9.2	9.3	9.2	101.1	100.0
Shortening and shortening oils	"	13.1	15.3	15.1	116.8	115.3
Other oils and fats	"	5.6	5.8	5.9	103.6	105.4
Butter	"	17.1	15.8	15.7	92.4	91.8
FRUIT						
Fresh	fresh equiv.	246.8	244.7	252.8	99.1	102.4
Canned	retail wt	110.9	113.3	114.8	102.2	103.5
Frozen	net wt canned	28.1	25.8	27.9	91.8	99.3
Juice	retail wt	3.2	3.1	3.2	96.9	100.0
Tomatoes, fresh	net wt canned	33.0	34.7	35.5	105.1	107.6
"	retail wt	11.1	12.6	10.9	113.5	98.2
"	net wt canned	5.2	6.1	5.9	117.3	113.5
Tomato	juice	8.9	8.0	8.4	89.9	94.4
"	pulp, paste and puree	2.2	1.7	2.2	77.3	100.0
"	ketchup	3.9	4.1	4.1	105.1	105.1
Citrus fruit, fresh	retail wt	25.6	27.1	26.2	105.9	102.3
"	juice	12.8	14.2	16.6	110.9	129.7
Apples, fresh	retail wt	26.7	24.8	26.8	92.9	100.4
"	canned	0.5	0.3	0.4	60.0	80.0
"	juice	6.8	6.7	6.2	98.5	91.2
"	frozen	0.4	0.4	0.3	100.0	75.0
"	sauce	1.3	1.1	1.2	84.6	92.3
"	pie filling	0.6	0.5	0.5	83.3	83.3
Apricots, fresh	retail wt	0.3	0.2	0.2	66.7	66.7
"	canned	0.6	0.5	0.5	83.3	83.3
Bananas, fresh	retail wt	16.8	17.6	18.1	104.8	107.7
Cherries, fresh	"	0.8	0.8	1.1	100.0	137.5
"	canned	0.3	0.3	0.3	100.0	100.0
"	frozen	0.6	0.6	0.6	100.0	100.0
Peaches, fresh	retail wt	4.5	5.4	5.9	120.0	131.1
"	canned	3.9	2.9	3.7	74.4	94.9

11.26 Per capita supplies of food moving into consumption 1970 and 1971, with average for 1965-69 (continued)

Kind of food and weight base			Pounds per capita per annum			Percentages of 1965-69 average	
			Average 1965-69	1970	1971 ^D	1970	1971 ^D
FRUIT (concluded)							
Pears, fresh	retail wt	2.8	2.8	3.5	100.0	125.0	
canned	net wt canned	1.9	1.3	1.9	68.4	100.0	
Pineapples, fresh	retail wt	0.2	0.3	0.3	150.0	150.0	
canned	net wt canned	2.3	2.1	2.9	91.3	126.1	
juice	"	1.0	1.0	0.8	100.0	80.0	
Plums, etc. fresh	retail wt	1.6	1.8	1.7	112.5	106.2	
canned	net wt canned	0.4	0.3	0.3	75.0	75.0	
Raspberries, fresh	retail wt	..	..	0.1	..	..
canned	net wt canned	0.2	0.1	0.1	50.0	50.0	
frozen	retail wt	0.6	0.4	0.5	66.7	83.3	
Strawberries, fresh	"	1.5	1.5	1.8	100.0	120.0	
canned	net wt canned	0.2	0.1	0.1	50.0	50.0	
frozen	retail wt	1.4	1.5	1.5	107.1	107.1	
Grapes, fresh	"	10.8	8.2	9.4	75.9	87.0	
Unspecified, fresh	"	8.1	10.2	8.8	125.9	108.6	
canned	net wt canned	4.7	4.4	3.8	93.6	80.8	
frozen	retail wt	0.2	0.2	0.3	100.0	150.0	
juice	net wt canned	3.5	4.8	3.5	137.1	100.0	
jams, jellies, marmalade	processed wt	5.8	5.0	4.9	86.2	84.5	
VEGETABLES ¹							
Fresh	fresh equiv.	115.0	119.0	118.1	103.5	102.7	
Canned	retail wt	73.0	77.6	73.2	106.3	100.3	
Frozen	net wt canned	18.7	17.4	19.3	93.0	103.2	
Cabbage, fresh	retail wt	5.1	6.0	5.8	117.6	113.7	
Lettuce	"	9.0	9.2	9.5	102.2	105.6	
Spinach, fresh	"	10.0	11.3	11.2	113.0	112.0	
Carrots, fresh	"	0.6	0.5	0.5	83.3	83.3	
canned	"	15.8	18.0	17.0	113.9	107.6	
frozen	net wt canned	1.1	0.8	1.0	72.7	90.9	
Beans, fresh	retail wt	0.2	0.5	0.6	250.0	300.0	
canned	"	1.0	0.7	0.9	70.0	90.0	
frozen	net wt canned	3.7	3.6	4.0	97.3	108.1	
Peas, fresh	retail wt	0.7	0.7	0.9	100.0	128.6	
canned	"	..	0.2	0.3	..	..
frozen	net wt canned	5.7	4.8	5.0	84.2	87.7	
Beets, fresh	retail wt	2.5	2.4	2.3	96.0	92.0	
canned	"	1.0	1.1	1.4	110.0	140.0	
Cauliflower, fresh	net wt canned	0.7	0.8	0.8	114.3	114.3	
Celery, fresh	retail wt	1.9	2.2	1.9	115.8	100.0	
Corn, fresh	"	6.4	6.4	6.9	100.0	107.8	
canned	"	3.8	5.1	3.3	134.2	86.8	
frozen	net wt canned	5.1	4.3	4.8	84.3	94.1	
Cucumbers, fresh	retail wt	0.8	0.8	0.8	100.0	100.0	
Onions, not processed	"	2.4	3.0	2.8	125.0	116.7	
Asparagus, fresh	"	12.9	12.4	12.4	96.1	96.1	
canned	"	0.3	0.2	0.2	66.7	66.7	
frozen	net wt canned	0.4	0.4	0.5	100.0	125.0	
Turnips, fresh	retail wt	..	..	..	..	..
Unspecified, fresh	"	6.2	5.8	3.1	93.5	50.0	
canned	"	1.7	1.5	1.8	88.2	105.9	
frozen	net wt canned	1.9	2.7	3.2	142.1	168.4	
frozen	retail wt	0.9	1.6	1.2	177.8	133.3	
MUSHROOMS							
Fresh	fresh equiv.	1.6	2.1	3.0	131.2	187.5	
Canned	retail wt	0.5	0.6	0.8	120.0	160.0	
canned	net wt canned	0.7	1.0	1.5	142.9	214.3	
POTATOES							
White	fresh equiv.	164.1	156.3	171.0	95.2	104.2	
Sweet	"	163.7	155.9	170.6	95.2	104.2	
canned	"	0.4	0.4	0.4	100.0	100.0	
MEAT							
Pork	carcass wt	154.2	159.4	165.3	103.4	107.2	
Beef	"	51.2	57.2	66.1	111.7	129.1	
Veal	"	84.3	85.9	87.2	101.9	103.4	
Mutton and lamb	"	6.8	4.4	4.4	64.7	64.7	
Offal	"	3.6	3.8	3.3	105.6	91.7	
Canned meat	"	3.8	3.4	4.3	89.5	113.2	
canned	net wt canned	6.2	7.9	..	127.4	..	
EGGS							
	fresh equiv.	31.8	32.8	32.7	103.1	102.8	
POULTRY ²							
Chicken	eviscerated wt	39.8	45.0	44.0	113.1	110.5	
Fowl	"	25.1	30.6	29.3	121.9	116.7	
Turkey	"	4.2	3.8	3.7	90.5	88.1	
Duck	"	10.0	10.1	10.4	101.0	104.0	
Goose	"	0.3	0.3	0.4	100.0	133.3	
canned	"	0.2	0.2	0.2	100.0	100.0	
FISH							
Fish and shellfish, fresh and frozen ³	edible wt	12.9	12.0	11.4	93.0	88.4	
Fish, cured (smoked, salted, pickled)	"	8.5	7.4	7.4	87.1	87.1	
Fish and shellfish, canned	"	1.0	0.8	0.7	80.0	70.0	
canned	"	3.4	3.8	3.3	111.8	97.1	
MILK AND CHEESE							
Cheddar cheese	milk solids	60.5	58.1	58.1	96.0	96.0	
Process cheese	retail wt	3.3	4.1	4.2	124.2	127.3	
Other cheese	"	4.2	4.5	4.7	107.1	111.9	
canned	"	2.4	3.3	3.8	137.5	158.3	

11.26 Per capita supplies of food moving into consumption 1970 and 1971, with average for 1965-69 (concluded)

Kind of food and weight base	Pounds per capita per annum			Percentages of 1965-69 average	
	Average 1965-69	1970	1971 ^D	1970	1971 ^D
MILK AND CHEESE (concluded)					
Cottage cheese	<i>retail wt</i> 1.7	2.0	2.2	117.6	129.4
Evaporated whole milk	" 14.8	12.7	12.5	85.8	84.5
Condensed whole milk	" 1.1	0.8	0.7	72.7	63.6
Powdered whole milk and cream	" 0.2	0.1	0.1	50.0	50.0
Miscellaneous milk products ⁴	" 0.3	0.2	0.2	66.7	66.7
Powdered skim milk ⁵	" 8.0	6.2	5.0	77.5	62.5
buttermilk	" 0.5	0.5	0.4	100.0	80.0
whey	" 2.0	2.1	2.6	105.0	130.0
Miscellaneous by-products ⁶	" 1.8	1.7	1.8	94.4	100.0
Fluid whole milk ⁷	" 303.2	286.9	286.8	94.6	94.6
Milk in ice cream	" 33.7	39.0	39.4	115.7	116.9
BEVERAGES					
Tea	<i>primary distribution wt</i> 2.4	2.2	2.4	91.7	100.0
Coffee	<i>green beans</i> 9.0	9.2	9.2	102.2	102.2

¹ Includes pickles, relishes, vegetables used in soups, etc.² Excludes Newfoundland.³ Excludes herring, fresh and frozen, and all fish used for bait.⁴ Includes formula milk, concentrated liquid milk and malted milk.⁵ Part of this product is used for animal feeds.⁶ Includes evaporated and condensed skim milk, condensed buttermilk, sugar of milk, formula skim milk products and concentrated liquid skim milk.⁷ Includes cream expressed as milk.**11.27 Supply, distribution and disappearance of meats and lard, 1969-71, with average for 1964-68**

Item	Average 1964-68	1969	1970	1971
BEEF				
Animals slaughtered	'000 3,260.2	3,254.6	3,220.8	3,299.3
Estimated dressed weight	'000 lb. 1,734,829	1,801,347	1,805,823	1,836,602
On hand, Jan. 1	" 43,779	40,064	39,944	43,473
Imports for consumption	" 32,836	147,532	170,274	153,158
Total supply	" 1,811,444	1,988,943	2,016,041	2,033,233
Exports	" 70,358	82,812	118,723	113,635
Used for canning	" 21,485	22,337	22,392	"
On hand, Dec. 31	" 43,575	39,944	43,473	35,860
Domestic disappearance	" 1,676,026	1,843,850	1,831,453	1,883,738
Per capita disappearance	lb. 83.5	87.4	85.6	86.9
VEAL				
Animals slaughtered	'000 1,173.7	903.5	823.2	763.7
Estimated dressed weight	'000 lb. 145,665	107,619	97,068	92,494
On hand, Jan. 1	" 4,578	4,236	4,172	5,316
Imports for consumption	" 1	1	1	1
Total supply	" 150,243	111,855	101,240	97,810
Exports	" 1	1	1	1
Used for canning	" 1,477	1,098	991	"
On hand, Dec. 31	" 4,406	4,172	5,316	3,449
Domestic disappearance	" 144,360	106,585	94,933	94,361
Per capita disappearance	lb. 7.2	5.1	4.4	4.4
MUTTON AND LAMB				
Animals slaughtered	'000 537.3	413.0	377.5	441.4
Estimated dressed weight	'000 lb. 23,451	18,081	16,619	18,989
On hand, Jan. 1	" 9,557	11,411	13,077	11,260
Imports for consumption	" 48,688	69,620	63,669	52,765
Total supply	" 81,696	99,112	93,365	83,014
Exports	" 405	690	635	93
Used for canning	" 1,318	1,038	970	"
On hand, Dec. 31	" 9,980	13,077	11,260	10,582
Domestic disappearance	" 69,993	84,307	80,500	72,339
Per capita disappearance	lb. 3.5	4.0	3.7	3.3
PORK				
Animals slaughtered	'000 8,502.9	8,730.1	10,092.6	11,550.1
Estimated dressed weight ²	'000 lb. 1,088,732	1,134,496	1,328,114	1,510,964
On hand, Jan. 1	" 27,112	24,249	24,467	26,878
Imports for consumption	" 37,300	70,224	26,295	16,954
Total supply	" 1,153,144	1,228,969	1,378,876	1,554,796
Exports	" 56,132	56,635	71,287	97,166
Used for canning	" 50,846	54,229	61,890	"
On hand, Dec. 31	" 26,914	24,467	26,878	29,200
Domestic disappearance	" 1,019,252	1,093,618	1,218,821	1,428,430
Per capita disappearance	lb. 50.8	51.9	56.9	65.9
OFFAL				
Estimated production	'000 lb. 115,818	115,560	121,267	130,071
On hand, Jan. 1	" 7,017	7,306	7,598	8,061
Imports for consumption	" 3,108	7,726	6,945	8,934
Total supply	" 125,943	130,592	135,810	147,066
Exports	" 40,779	38,799	52,908	45,460

11.27 Supply, distribution and disappearance of meats and lard, 1969-71, with average for 1964-68 (concluded)

Item		Average 1964-68	1969	1970	1971
OFFAL (concluded)					
Used for canning	'000 lb.	2,231	2,230	2,353	
On hand, Dec. 31	"	7,235	7,598	8,061	9,132
Domestic disappearance	"	75,698	81,965	72,488	92,474
Per capita disappearance	lb.	3.8	4.0	3.4	4.3
CANNED MEATS					
Estimated production	'000 lb.	101,448	132,405	147,316	..
On hand, Jan. 1	"	13,777			
Imports for consumption	"	19,620	29,076	23,650	20,776
Total supply	"	134,845	161,481	170,966	
Exports	"	5,425	2,375	2,398	2,447
On hand, Dec. 31	"	11,916			..
Domestic disappearance	"	117,504	159,106	168,568	..
Per capita disappearance	lb.	5.8	7.5	7.9	..
LARD³					
Estimated production	'000 lb.	126,403	..	..	..
On hand, Jan. 1	"	6,274			
Imports for consumption	"	22,790	30,154	20,811	13,413
Total supply	"	155,467			
Exports	"	35	36	40	632
On hand, Dec. 31	"	6,121	..	..	..
Domestic disappearance	"	149,311	..	..	..
Per capita disappearance	lb.	7.5	..	..	..

¹ Included with beef.² Trimmed of larding fat.³ Includes commercial lard production and estimated lard equivalent of renderable pork fat available from all uninspected slaughter.**11.28 Number of census-farms, by province, Censuses 1966 and 1971**

Province or territory	1966	1971
Newfoundland	1,709	1,042
Prince Edward Island	6,357	4,543
Nova Scotia	9,621	6,008
New Brunswick	8,706	5,485
Quebec	80,294	61,257
Ontario	109,887	94,722
Manitoba	39,747	34,981
Saskatchewan	85,686	76,970
Alberta	69,411	62,702
British Columbia	19,085	18,400
Yukon Territory and Northwest Territories	19	18
Canada	430,522	366,128

11.29 Use of agricultural land, by province, Censuses 1966 and 1971 (acres)

Land use	Province or territory					
	Newfoundland		Prince Edward Island		Nova Scotia	
	1966	1971	1966	1971	1966	1971
Improved land	20,566	19,148	569,799	494,131	485,859	386,021
Under crops ¹	12,409	8,736	398,373	351,384	314,143	242,959
Pasture (improved)	5,320	7,881	152,191	114,271	132,355	107,390
Summerfallow	258	499	2,896	9,186	2,587	6,272
Other	2,579	2,032	16,339	19,290	36,774	29,400
Unimproved land	28,947	43,556	357,179	280,499	1,366,036	942,854
Woodland	13,750	11,338	279,681	210,911	1,084,273	740,338
Other	15,197	32,218	77,498	69,588	281,763	202,516
Total	49,513	62,704	926,978	774,630	1,851,895	1,328,875
	New Brunswick		Quebec		Ontario	
	1966	1971	1966	1971	1966	1971
Improved land	638,649	487,380	7,629,346	6,449,992	12,004,305	10,864,601
Under crops ¹	427,832	322,310	5,166,421	4,337,236	8,358,741	7,855,890
Pasture (improved)	166,835	114,836	2,121,141	1,712,106	2,935,693	2,336,446
Summerfallow	5,822	8,594	48,779	81,672	229,852	237,916
Other	38,160	41,640	293,005	318,978	480,019	434,349
Unimproved land	1,173,046	851,753	5,256,723	4,351,124	5,821,740	5,098,455
Woodland	973,888	682,237	3,777,489	3,098,920	2,834,417	2,300,621
Other	199,158	169,516	1,479,234	1,252,204	2,987,323	2,797,834
Total	1,811,695	1,339,133	12,886,069	10,801,116	17,826,045	15,963,056

11.29 Use of agricultural land, by province, Censuses 1966 and 1971 (acres) (concluded)

Land use	Province or territory					
	Manitoba		Saskatchewan		Alberta	
	1966	1971	1966	1971	1966	1971
Improved land	12,446,065	12,803,988	45,468,776	46,426,487	27,276,251	28,460,328
Under crops ¹	8,693,682	9,122,474	27,018,238	27,339,147	17,707,659	18,092,544
Pasture (improved)	770,519	730,499	1,909,653	1,958,192	2,310,945	2,744,940
Summerfallow	2,668,830	2,655,197	15,895,825	16,559,825	6,659,125	7,008,714
Other	313,034	295,818	645,060	569,323	598,522	614,130
Unimproved land	6,637,752	6,204,271	19,940,587	18,630,388	21,706,624	21,045,959
Woodland	1,212,959	960,183	1,347,741	999,180	1,859,257	1,666,085
Other	5,424,793	5,244,088	18,592,846	17,631,208	19,847,367	19,379,874
Total	19,083,817	19,008,259	65,409,363	65,056,875	48,982,875	49,506,287
	British Columbia		Yukon Territory and Northwest Territories		Canada	
	1966	1971	1966	1971	1966	1971
Improved land	1,614,141	1,755,247	620	1,554	108,154,377	108,148,877
Under crops ¹	955,287	1,092,593	219	405	69,053,004	68,765,678
Pasture (improved)	436,920	397,864	168	1,039	10,941,740	10,225,464
Summerfallow	117,684	172,816	25	36	25,631,683	26,740,727
Other	104,250	91,974	208	74	2,527,950	2,417,008
Unimproved land	3,678,169	4,067,984	3,648	2,894	65,970,451	61,519,737
Woodland	799,935	844,257	534	101	14,183,924	11,514,171
Other	2,878,234	3,223,727	3,114	2,793	51,786,527	50,005,566
Total	5,292,310	5,823,231	4,268	4,448	174,124,828	169,668,614

¹ Includes field, vegetable, fruit and nursery crop land.

11.30 Economic classification of census-farms, by province, Censuses 1966 and 1971 (number)

Economic class	Province or territory					
	Newfoundland		Prince Edward Island		Nova Scotia	
	1966	1971	1966	1971	1966	1971
Value of products sold of						
\$50,000 or over	} 33 {	24	} 97 {	115	} 159 {	213
35,000 - \$49,999		11		88		122
25,000 - 34,999		33	74	133	91	161
15,000 - 24,999	38	38	225	288	262	383
10,000 - 14,999	31	38	385	385	399	321
7,500 - 9,999	30	20	407	347	322	242
5,000 - 7,499	47	37	744	562	525	379
3,750 - 4,999	38	28	600	359	445	297
2,500 - 3,749	65	53	796	503	664	450
1,200 - 2,499	131	95	1,127	674	1,410	946
250 - 1,199	541	301	1,274	721	3,149	1,619
50 - 249	731	339	619	360	2,167	855
Institutional farms, etc.	5	25	9	8	28	20
Total	1,709	1,042	6,357	4,543	9,621	6,008
	New Brunswick		Quebec		Ontario	
	1966	1971	1966	1971	1966	1971
Value of products sold of						
\$50,000 or over	} 167 {	138	} 799 {	902	} 4,385 {	4,603
35,000 - \$49,999		132		837		4,041
25,000 - 34,999	118	180	643	1,625	3,733	5,698
15,000 - 24,999	315	344	2,345	5,094	9,692	11,532
10,000 - 14,999	334	366	4,156	6,898	11,522	9,950
7,500 - 9,999	346	258	4,761	5,681	9,210	7,111
5,000 - 7,499	532	399	9,644	8,576	13,173	9,416
3,750 - 4,999	424	293	8,105	5,175	8,489	5,898
2,500 - 3,749	702	493	11,508	6,144	10,520	7,418
1,200 - 2,499	1,464	865	15,651	7,172	14,377	9,894
250 - 1,199	2,588	1,251	14,120	7,597	14,410	10,874
50 - 249	1,699	748	8,414	5,453	10,294	8,203
Institutional farms, etc.	17	18	148	103	82	84
Total	8,706	5,485	80,294	61,257	109,887	94,722
	Manitoba		Saskatchewan		Alberta	
	1966	1971	1966	1971	1966	1971
Value of products sold of						
\$50,000 or over	} 630 {	606	} 1,093 {	737	} 2,195 {	2,236
35,000 - \$49,999		531		895		1,797
25,000 - 34,999	585	926	1,789	1,919	1,876	2,657
15,000 - 24,999	2,556	3,138	8,571	7,556	5,909	7,292
10,000 - 14,999	4,452	4,263	13,610	11,496	8,012	8,007
7,500 - 9,999	4,238	3,751	11,496	10,061	6,987	6,167
5,000 - 7,499	6,409	5,233	15,570	13,779	10,130	8,079
3,750 - 4,999	3,933	3,285	8,614	7,965	6,328	4,821
2,500 - 3,749	4,569	3,603	9,219	8,522	7,534	5,477
1,200 - 2,499	5,760	4,212	9,149	8,122	9,362	6,494
250 - 1,199	4,235	3,341	4,278	4,009	6,599	5,674
50 - 249	2,341	2,055	2,042	1,642	4,318	3,823
Institutional farms, etc.	39	37	255	267	161	178
Total	39,747	34,981	85,686	76,970	69,411	62,702

11.30 Economic classification of census-farms, by province, Censuses 1966 and 1971 (number) (concluded)

Economic class	Province or territory					
	British Columbia		Yukon Territory and Northwest Territories		Canada	
	1966	1971	1966	1971	1966	1971
Value of products sold of \$50,000 or over						
35,000 - \$49,999	724	869	—	—	10,282	10,443
25,000 - 34,999	456	728	—	—	9,384	14,060
15,000 - 24,999	1,236	1,204	—	—	31,149	36,869
10,000 - 14,999	1,314	1,070	2	—	44,217	42,794
7,500 - 9,999	956	814	—	—	38,753	34,452
5,000 - 7,499	1,329	1,201	—	—	58,103	47,661
3,750 - 4,999	947	824	—	1	37,923	28,946
2,500 - 3,749	1,445	1,343	2	2	47,024	34,008
1,200 - 2,499	2,513	2,353	3	6	60,947	40,833
250 - 1,199	4,071	4,407	6	5	55,271	39,799
50 - 249	4,066	2,979	1	4	36,692	26,461
Institutional farms, etc.	28	36	5	—	777	776
Total	19,085	18,400	19	18	430,522	366,128

11.31 Census-farms with sales of \$2,500 or more, classified by type of farm and by province, Census 1971 (number)

Type of farm	Province or territory						
	Nfld.	PEI	NS	NB	Que.	Ont.	
Dairy	70	629	1,019	821	28,646	17,718	
Cattle, hogs, sheep (excl. dairy farms)	40	980	655	535	5,183	28,129	
Poultry	54	21	169	111	1,561	1,912	
Wheat	—	—	—	—	20	313	
Small grains (excl. wheat farms)	—	11	9	4	342	5,189	
Field crops, other than small grains	30	616	76	670	1,124	4,593	
Fruits and vegetables	58	26	250	98	1,472	3,856	
Forestry	5	6	114	119	331	165	
Miscellaneous specialty	5	8	109	26	423	1,606	
Mixed	20	483	167	219	1,830	2,186	
Livestock combination	3	400	77	132	1,169	902	
Field crops combination	—	16	8	15	137	567	
Other combination	17	67	82	72	524	717	
Total	282	2,780	2,568	2,603	40,932	65,667	
	Man.	Sask.	Alta.	BC	YT and NWT	Canada	
Dairy	1,614	701	2,490	1,633	—	55,341	
Cattle, hogs, sheep (excl. dairy farms)	9,829	15,913	25,843	2,501	2	89,610	
Poultry	519	210	413	644	1	5,615	
Wheat	2,738	26,516	3,893	166	—	33,646	
Small grains (excl. wheat farms)	7,249	13,900	9,105	390	—	36,199	
Field crops, other than small grains	376	112	814	387	—	8,798	
Fruits and vegetables	65	14	40	1,948	—	7,827	
Forestry	16	3	28	162	—	949	
Miscellaneous specialty	209	128	320	571	—	3,405	
Mixed	2,721	5,433	3,587	223	—	16,869	
Livestock combination	1,418	2,269	1,612	37	—	8,019	
Field crops combination	767	1,808	1,301	86	—	4,705	
Other combination	536	1,356	674	100	—	4,145	
Total	25,336	62,930	46,533	8,625	3	258,259	

11.32 Size of census-farms, by province, Census 1971 (number)

Size of farm	Province or territory					
	Nfld.	PEI	NS	NB	Que.	Ont.
Under 3 acres	197	33	155	79	483	1,529
3 - 9 acres	321	58	234	99	893	3,619
10 - 69 "	358	660	976	552	7,414	16,763
70 - 239 "	129	2,935	2,732	2,737	38,834	52,778
240 - 399 "	20	611	1,025	1,134	9,903	13,315
400 - 559 "	5	145	473	513	2,793	4,233
560 - 759 "	4	62	222	188	647	1,461
760 - 1,119 "	2	19	127	124	226	715
1,120 - 1,599 "	1	12	34	34	41	224
1,600 acres and over	5	8	30	25	23	85
Total	1,042	4,543	6,008	5,485	61,257	94,722
	Man.	Sask.	Alta.	BC	YT and NWT	Canada
Under 3 acres	146	131	204	1,030	1	3,988
3 - 9 acres	532	301	700	3,470	1	10,228
10 - 69 "	1,713	886	2,521	6,765	3	38,611
70 - 239 "	6,391	7,213	10,609	3,186	7	127,551
240 - 399 "	7,739	12,411	12,606	1,100	3	59,867
400 - 559 "	6,066	11,780	9,128	685	—	35,821
560 - 759 "	4,979	12,638	8,196	573	—	28,970
760 - 1,119 "	4,381	15,316	8,478	607	3	29,998
1,120 - 1,599 "	1,910	9,261	4,846	390	—	16,753
1,600 acres and over	1,124	7,033	5,414	594	—	14,341
Total	34,981	76,970	62,702	18,400	18	366,128

11.33 Age of census-farm operators, by province, Censuses 1966 and 1971 (number)

Age	Province or territory					
	Newfoundland		Prince Edward Island		Nova Scotia	
	1966	1971	1966	1971	1966	1971
Age of operator						
Under 25 years	19	14	132	96	82	60
25 - 34 "	153	81	789	549	742	542
35 - 44 "	326	202	1,266	931	1,640	1,072
45 - 54 "	569	362	1,668	1,186	2,690	1,704
55 - 59 "	243	151	803	650	1,280	917
60 - 64 "	166	115	600	490	1,131	710
65 - 69 "	120	62	510	309	879	486
70 years or over	113	55	589	332	1,177	517
Total	1,709	1,042	6,357	4,543	9,621	6,008
	New Brunswick		Quebec		Ontario	
	1966	1971	1966	1971	1966	1971
Age of operator						
Under 25 years	94	75	1,506	1,144	1,865	1,688
25 - 34 "	719	474	11,210	8,251	13,037	11,802
35 - 44 "	1,643	995	20,350	14,487	25,442	21,757
45 - 54 "	2,596	1,709	23,282	19,038	29,199	26,705
55 - 59 "	1,174	837	9,571	7,920	13,380	11,520
60 - 64 "	992	641	6,930	5,443	11,459	9,013
65 - 69 "	642	389	4,137	2,828	7,884	6,369
70 years or over	846	365	3,308	2,146	7,621	5,868
Total	8,706	5,485	80,294	61,257	109,887	94,722
	Manitoba		Saskatchewan		Alberta	
	1966	1971	1966	1971	1966	1971
Age of operator						
Under 25 years	931	1,037	2,634	2,735	1,916	1,591
25 - 34 "	5,171	4,533	11,888	9,695	10,460	8,915
35 - 44 "	9,436	7,577	20,599	16,611	17,244	15,088
45 - 54 "	11,483	10,196	24,067	22,317	18,516	17,930
55 - 59 "	4,899	4,718	10,025	9,991	7,949	7,225
60 - 64 "	3,739	3,468	7,515	7,507	6,555	5,684
65 - 69 "	2,236	1,983	4,540	4,432	3,857	3,638
70 years or over	1,852	1,469	4,418	3,682	2,914	2,631
Total	39,747	34,981	85,686	76,970	69,411	62,702
	British Columbia		Yukon Territory and Northwest Territories		Canada	
	1966	1971	1966	1971	1966	1971
Age of operator						
Under 25 years	230	209	—	—	9,409	8,649
25 - 34 "	2,028	2,041	4	3	56,201	46,886
35 - 44 "	4,603	4,705	5	6	102,554	83,431
45 - 54 "	5,310	5,317	6	4	119,386	106,468
55 - 59 "	2,326	2,225	—	3	51,650	46,157
60 - 64 "	2,026	1,716	2	1	41,115	34,788
65 - 69 "	1,243	1,176	—	1	26,048	21,673
70 years or over	1,319	1,011	2	—	24,159	18,076
Total	19,085	18,400	19	18	430,522	366,128

11.34 Selected farm machinery, by province, Censuses 1966 and 1971 (number)

Type of machine	Province or territory					
	Nfld.		PEI		NS	
	1966	1971	1966	1971	1966	1971
Automobiles	426	5,026	4,112	5,700	5,869	56,464
Motor trucks	347	4,306	3,306	4,408	4,359	48,993
Tractors	764	3,055	3,055	5,393	4,404	24,499
Grain combines	519	6,341	7,252	4,540	3,969	21,129
Swathers	430	5,865	6,535	7,989	81,674	162,303
Pick-up hay balers	—	1,020	252	6,786	80,878	165,752
Forage crop harvesters	—	1,237	319	965	6,108	25,372
	—	59	51	887	5,804	25,320
	6	104	81	69	2,953	4,578
	53	1,806	2,128	137	3,866	7,845
	69	1,964	2,317	2,300	24,574	38,201
	9	90	175	2,394	31,974	39,348
	10	146	290	166	3,705	11,567
	—	—	—	209	5,021	13,136
	Man.	Sask.	Alta.	BC	YT and NWT	Canada
Automobiles	35,800	72,571	53,171	16,381	10	355,957
Motor trucks	32,063	62,929	51,564	17,773	8	324,397
Tractors	36,689	102,470	85,559	14,116	14	344,836
Grain combines	41,306	116,600	93,471	17,243	27	369,849
Swathers	65,552	134,908	112,245	19,676	24	598,483
Pick-up hay balers	64,587	132,632	111,256	21,953	24	596,698
Forage crop harvesters	24,815	67,144	42,838	1,667	1	170,182
	23,325	61,811	42,373	1,673	2	162,751
	23,530	56,321	35,706	949	—	124,216
	23,833	61,282	40,749	1,925	1	139,829
	12,712	26,155	25,161	3,858	6	136,954
	13,472	28,574	28,187	4,527	6	152,832
	1,591	2,203	3,237	1,573	1	24,317
	1,342	2,630	3,869	1,879	2	28,534

11.35 Estimated acreage and production of wheat harvested¹ in 1970 and 1971 in specified countries, with average for 1965-69

Continent and country	Acreage of wheat ² ('000 acres)			Production of wheat ('000,000 bu)		
	Average 1965-69	1970	1971	Average 1965-69	1970	1971
NORTH AMERICA	82,624	58,467	69,521	2,165.7	1,783.7	2,240.2
Canada	28,489	12,478	19,399	680.7	331.5	529.5
United States	52,186	44,124	48,434	1,413.7	1,370.2	1,639.5
Mexico	1,855	1,766	1,581	70.2	80.8	69.8
Guatemala	94	99	106	1.1	1.2	1.4
SOUTH AMERICA	18,258	15,887	19,782	328.7	293.3	328.2
Argentina	13,168	8,230	10,609	238.1	156.2	199.9
Brazil	1,507	4,369	5,681	20.5	63.7	74.6
Chile	1,820	1,796	1,759	44.9	50.3	33.1
Colombia	235	114	104	3.8	1.8	1.7
Ecuador	170	185	173	2.3	2.4	2.2
Peru	370	361	370	5.2	4.7	5.1
Uruguay	988	832	1,087	13.9	14.3	11.6
EUROPE³	69,619	67,268	68,204	2,533.1	2,449.0	2,971.6
EEC						
Belgium	514	474	494	28.9	27.0	33.6
France	10,110	9,287	9,821	510.2	474.8	564.4
Germany, Federal Republic of	3,544	3,688	3,814	197.7	208.0	254.6
Italy	10,406	10,221	9,761	352.0	353.8	370.0
Luxembourg	40	27	30	1.6	1.0	1.4
Netherlands	380	351	351	25.1	23.6	25.9
Total, EEC	24,991	24,048	24,270	1,115.5	1,088.3	1,249.9
Austria	741	679	677	33.8	29.8	35.8
Denmark	249	284	299	16.7	18.8	21.5
Finland	580	435	427	17.5	15.0	16.3
Greece	2,527	2,272	2,371	66.6	72.4	71.0
Ireland	185	235	227	9.7	12.3	12.3
Norway	10	10	7	0.4	0.4	0.4
Portugal	1,440	1,487	1,554	20.3	19.8	30.7
Spain	10,080	9,139	8,892	186.2	149.2	200.4
Sweden	608	655	605	34.7	35.3	36.6
Switzerland	249	235	232	13.4	11.4	14.1
United Kingdom	2,309	2,495	2,710	135.1	153.4	177.2
Total, Western Europe	43,968	41,973	42,272	1,649.8	1,606.3	1,866.3
Albania	306	—	—	3.9	—	—
Bulgaria	2,690	2,505	2,490	106.1	111.4	112.2
Czechoslovakia	2,322	2,670	2,791	96.7	116.6	146.2
German Democratic Republic	1,304	1,477	1,482	71.3	78.3	91.5
Hungary	2,865	3,152	3,147	104.3	99.9	143.7
Poland	4,350	4,903	5,088	147.2	169.3	200.6
Romania	7,165	5,733	6,170	191.2	123.3	205.2
Yugoslavia	4,653	4,523	4,765	162.6	139.3	205.9
Total, Eastern Europe ³	25,653	25,295	25,933	883.3	842.7	1,105.3
USSR (Europe and Asia)	168,377	161,044	158,080	2,458.1	2,939.5	3,009.3
AFRICA³	17,646	19,995	20,249	222.9	272.0	287.8
Algeria	4,881	5,809	5,187	46.1	54.4	44.1
Egypt	1,329	1,354	1,405	51.3	59.4	57.7
Ethiopia	1,067	—	—	11.9	—	—
Kenya	371	316	311	7.3	6.6	6.0
Morocco	4,352	4,641	4,656	53.2	68.7	81.2
South Africa, Republic of	3,468	4,767	4,965	36.2	51.3	59.5
Sudan	168	—	—	2.9	—	—
Tunisia	2,011	1,852	2,346	14.0	16.5	22.0
ASIA³	154,074	163,776	166,187	2,168.7	2,539.5	2,705.3
Afghanistan	6,301	6,669	6,257	90.1	86.3	82.7
China, People's Republic of	60,515	60,021	60,268	805.4	900.2	881.8
Cyprus	146	124	161	2.8	1.8	3.3
India	34,536	41,066	44,193	509.3	738.3	854.2
Iran	10,325	10,374	10,621	135.1	139.6	142.2
Iraq	—	—	4,693	—	—	33.1
Israel	210	264	279	5.8	4.6	7.3
Japan	919	566	410	37.3	17.4	16.2
Jordan	618	605	739	6.6	2.8	7.4
Korea, Republic of	380	393	353	12.0	13.1	11.8
Lebanon	148	151	148	2.1	1.8	1.7
Nepal	329	370	—	7.2	9.2	—
Pakistan	13,995	15,682	15,279	190.0	271.9	242.1
Syrian Arab Republic	2,305	2,100	2,161	22.8	18.4	22.0
Turkey	18,710	20,254	20,254	303.7	293.9	393.2
OCEANIA	22,445	16,240	18,098	402.6	301.9	332.6
Australia	22,178	16,003	17,804	389.1	289.9	317.6
New Zealand	269	237	294	13.4	12.0	15.0
World total³	533,046	502,677	520,120	10,279.9	10,578.9	11,875.0

¹ Years shown refer to years of harvest in the Northern Hemisphere. Harvests of Northern Hemisphere countries are combined with those of the Southern Hemisphere which immediately follow.

² Harvested acreage as far as possible.

³ Estimated totals include allowances for producing countries not shown.

11.36 Estimated production of oats and barley harvested¹ in 1970 and 1971 in specified countries, with average for 1965-69 (million bushels)

Continent and country	Oats			Barley		
	Average 1965-69	1970	1971	Average 1965-69	1970	1971
NORTH AMERICA	<i>1,198.1</i>	<i>1,226.3</i>	<i>1,191.7</i>	<i>702.6</i>	<i>835.9</i>	<i>1,072.6</i>
Canada	365.5	367.8	363.5	293.7	415.7	601.6
United States	829.4	855.3	824.3	399.7	409.8	462.5
Mexico	3.1	3.2	3.9	9.1	10.3	8.5
SOUTH AMERICA	<i>46.2</i>	<i>35.7</i>	<i>42.9</i>	<i>46.8</i>	<i>40.8</i>	<i>51.3</i>
Argentina	34.0	23.3	30.8	23.5	16.9	25.4
Chile	7.8	7.3	8.0	5.4	5.2	6.4
Colombia	—	—	—	4.0	4.1	5.1
Ecuador	—	—	—	4.6	5.1	4.6
Peru	—	—	—	7.7	7.5	7.6
Uruguay	4.3	5.1	4.1	1.5	2.1	2.3
EUROPE	<i>1,122.4</i>	<i>1,089.6</i>	<i>1,339.8</i>	<i>2,001.3</i>	<i>2,039.9</i>	<i>2,391.7</i>
EEC						
Belgium	21.6	12.7	12.6	25.9	24.2	27.1
France	164.5	134.2	203.4	395.2	367.8	411.1
Germany, Federal Republic of	168.3	161.1	266.7	202.7	218.3	257.2
Italy	31.0	31.5	32.5	12.7	14.5	16.9
Luxembourg	2.5	2.0	2.3	2.0	2.1	2.4
Netherlands	22.4	13.0	13.4	17.7	15.3	17.1
Total, EEC	410.3	354.6	530.9	656.1	642.3	731.8
Austria	20.0	17.6	18.4	34.0	41.9	46.7
Denmark	54.1	40.9	45.6	211.0	221.1	251.4
Finland	65.5	86.2	92.3	31.2	42.9	48.4
Greece	9.6	7.0	7.5	26.6	35.8	36.5
Ireland	18.3	14.0	13.0	29.7	34.0	42.0
Norway	8.4	14.7	18.1	22.8	26.6	26.1
Portugal	6.4	4.7	8.6	3.2	2.5	3.9
Spain	30.6	26.5	37.7	130.0	142.0	219.7
Sweden	84.8	109.3	121.1	71.3	87.4	93.2
Switzerland	2.1	1.9	2.5	5.1	6.2	7.3
United Kingdom	82.7	79.9	88.7	399.5	344.3	393.9
Total, Western Europe	792.8	757.3	984.4	1,620.6	1,627.0	1,901.0
Bulgaria	7.9	6.4	6.5	42.7	53.6	57.7
Czechoslovakia	54.2	50.3	59.0	87.8	104.7	130.9
German Democratic Republic	52.0	36.2	48.6	85.3	88.5	105.0
Hungary	4.8	3.7	5.5	42.9	25.4	35.9
Poland	179.5	208.1	207.8	71.0	98.7	112.3
Romania	9.2	7.6	7.8	24.2	23.6	27.6
Yugoslavia	21.9	20.0	20.2	26.7	18.5	21.3
Total, Eastern Europe	329.6	332.2	355.5	380.7	412.9	490.7
USSR (Europe and Asia)	<i>546.0</i>	<i>739.2</i>	<i>784.6</i>	<i>1,057.3</i>	<i>1,405.4</i>	<i>1,313.6</i>
AFRICA²	<i>10.6</i>	<i>10.6</i>	<i>7.8</i>	<i>125.8</i>	<i>135.2</i>	<i>176.8</i>
Algeria	—	—	—	17.3	16.1	—
Egypt	—	—	—	5.0	3.8	—
Morocco	1.0	1.4	1.4	58.1	67.8	76.9
South Africa, Republic of	8.1	7.8	5.8	1.4	1.5	1.6
Tunisia	—	—	—	5.0	6.9	6.4
ASIA²	<i>88.1</i>	<i>89.2</i>	<i>91.8</i>	<i>846.6</i>	<i>822.2</i>	<i>832.3</i>
Cyprus	—	—	—	3.9	2.6	5.5
India	—	—	—	121.0	124.7	131.6
Iran	—	—	—	50.4	55.1	36.7
Iraq	—	—	—	36.6	32.2	—
Israel	—	—	—	1.7	0.6	0.8
Japan	6.5	4.0	3.9	45.6	26.3	23.1
Jordan	—	—	—	2.4	0.7	1.7
Korea, Republic of	—	—	—	90.4	90.7	85.3
Pakistan	—	—	—	5.1	5.9	5.6
Syrian Arab Republic	—	—	—	18.8	18.4	16.1
Turkey	29.8	26.9	29.5	161.7	151.6	188.3
OCEANIA	<i>95.7</i>	<i>107.8</i>	<i>86.3</i>	<i>68.8</i>	<i>118.4</i>	<i>152.6</i>
Australia	92.7	104.6	82.8	60.8	108.0	142.7
New Zealand	2.9	3.2	3.5	8.0	10.4	9.9
World total²	3,107.1	3,298.3	3,544.8	4,849.1	5,397.8	5,990.8

¹ Years shown refer to years of harvest in the Northern Hemisphere. Harvests of Northern Hemisphere countries are combined with those of the Southern Hemisphere which immediately follow.

² Estimated totals include allowances for producing countries not shown.

11.37 Supply and disposition of Canadian grain, crop years ended July 31, 1970 and 1971 (million bushels)

Item	Wheat	Oats	Barley	Rye	Flaxseed	Rapeseed
CROP YEAR 1969-70						
Carryover, Aug. 1, 1969	851.8	128.7	199.4	8.7	4.9	5.1
Production in 1969	684.3	371.4	378.4	16.5	27.5	33.4
Imports	—	—	—	—	1	—
Total, supply	1,536.1	500.0	577.8	25.2	32.5	38.5
Exports ²	346.5	5.2	88.3	3.8	18.6	22.2
Domestic use ³	180.9	353.5	289.4	10.7	7.9	12.6
Total, disposition	527.4	358.7	377.7	14.5	26.5	34.8
Carryover, July 31, 1970	1,008.7	141.3	200.1	10.6	6.0	3.6
CROP YEAR 1970-71						
Carryover, Aug. 1, 1970	1,008.7	141.3	200.1	10.6	6.0	3.6
Production in 1970	331.5	367.8	415.7	22.4	48.9	72.2
Imports	—	—	—	—	—	—
Total, supply	1,340.2	509.2	615.8	33.1	54.9	75.8
Exports ²	435.2	13.4	179.6	8.9	21.2	46.8
Domestic use ³	170.8	370.5	291.9	11.4	7.1	18.0
Total, disposition	606.1	383.8	471.5	20.3	28.3	64.8
Carryover, July 31, 1971	734.2	125.4	144.3	12.7	26.6	11.0

¹ Fewer than 50,000 bu.² Includes seed wheat, wheat flour in terms of wheat; seed oats, rolled oats and oatmeal in terms of oats; and malt in terms of barley.³ Includes human food, seed requirements, industrial use, loss in handling and animal feed.**11.38 Lake shipments of Canadian grain from Thunder Bay, navigation seasons 1970 and 1971 (bushels)**

Year and item	To Canadian ports	To US ports	To overseas ports	Total shipments
1970				
Wheat	271,581,686	384,214	2,395,676	274,361,576
Oats	19,100,518	—	8,923,070	28,023,588
Barley	126,171,697	8,922,920	9,888,877	144,983,494
Rye	1,961,810	1,061,610	518,427	3,541,847
Flaxseed	10,788,477	—	1,933,840	12,722,317
Rapeseed	5,436,146	—	2,485,350	7,921,496
Mustard seed	—	—	641,020	641,020
Total	435,040,334	10,368,744	26,786,260	472,195,338
1971				
Wheat	307,906,649	—	4,389,084	312,295,733
Oats	18,933,441	—	7,877,700	26,811,141
Barley	152,950,334	9,013,085	5,745,223	167,708,642
Rye	1,686,038	—	3,107,697	4,793,735
Flaxseed	6,316,088	—	11,485,276	17,801,364
Rapeseed	2,080,183	—	14,020,586	16,100,769
Mustard seed	—	—	1,125,369	1,125,369
Total	489,872,733	9,013,085	47,750,935	546,636,753

11.39 Licensed grain storage capacity and grain in store, crop years 1969-70 and 1970-71

Crop year and storage position	Licensed storage capacity	Canadian grain ¹ in licensed storage				Proportion of licensed storage capacity occupied		
	Dec. 1, 1969	Dec. 3, 1970	Apr. 1, 1970	July 31, 1970	Dec. 3, 1969	Apr. 1, 1970	July 31, 1970	
	'000 bu	'000 bu	'000 bu	'000 bu	%	%	%	
1969-70								
Western country	397,349	340,100	320,386	347,329	85.6	80.6	87.4	
Interior private and mill	13,178	5,865	5,429	5,638	44.5	41.2	42.8	
Interior terminals	17,100	14,715	15,056	15,551	86.1	88.0	90.9	
Pacific Coast	28,318	16,960	17,828	17,790	59.9	63.0	62.8	
Churchill	5,000	4,694	4,694	4,155	93.9	93.9	83.1	
Thunder Bay	107,321	45,986	84,161	63,863	42.8	78.4	59.5	
Georgian Bay and upper Lake ports	35,316	31,346	9,517	23,013	88.8	26.9	65.2	
Lower Lake and upper St. Lawrence ports	19,100	12,690	9,069	8,185	66.4	47.5	42.9	
Lower St. Lawrence ports	69,182	46,536	26,789	25,863	67.3	38.7	37.4	
Maritime ports (excl. Newfoundland)	8,229	7,292	1,548	3,789	88.6	18.8	46.0	
Total, 1969-70	700,095	526,184	494,477	515,176	75.2	70.6	73.6	

11.39 Licensed grain storage capacity and grain in store, crop years 1969-70 and 1970-71 (concluded)

Crop year and storage position	Licensed storage capacity	Canadian grain ¹ in licensed storage				Proportion of licensed storage capacity occupied		
	Dec. 1, 1970 '000 bu	Dec. 2, 1971 '000 bu	Mar. 31, 1971 '000 bu	July 31, 1971 '000 bu	Dec. 2, 1970 %	Mar. 31, 1971 %	July 31, 1971 %	
1970-71								
Western country	398,294	278,958	302,264	303,935	70.0	75.9	76.3	
Interior private and mill	13,364	5,818	6,172	6,153	43.5	46.2	46.0	
Interior terminals	17,100	14,168	10,182	9,379	82.9	59.5	54.8	
Pacific Coast	28,318	15,471	6,512	12,793	54.6	23.0	45.2	
Churchill	5,000	2,955	2,955	4,449	59.1	59.1	89.0	
Thunder Bay	105,571	43,658	85,860	48,728	41.4	81.3	46.2	
Georgian Bay and upper Lake ports	35,316	29,403	8,950	8,190	83.3	25.3	23.2	
Lower Lake and upper St. Lawrence ports	19,100	10,053	6,211	4,851	52.6	32.5	25.4	
Lower St. Lawrence ports	69,182	31,313	18,450	32,788	45.3	26.7	47.3	
Maritime ports (excl. Newfoundland)	8,229	7,346	2,316	2,973	89.3	28.1	36.1	
Total, 1970-71	699,475	439,143	449,872	434,239	62.8	64.3	62.1	

¹ Wheat, oats, barley, rye, flaxseed and rapeseed.

11.40 Wheat milled for flour, and production and exports of wheat flour, ten-year average 1959-68 and crop years ended July 31, 1969-71

Crop year	Wheat milled for flour '000 bu	Wheat flour production cwt	Wheat flour exports	
			Amount cwt	Production %
Av. 1958-59 — 1967-68	90,995	40,560,719	15,222,336	37.5
1968-69	85,049	37,621,151	10,705,452	28.5
1969-70	90,557	39,640,459	11,723,205	29.6
1970-71	87,467	38,534,863	10,783,801	28.0

Sources

- 11.1 - 11.18 Agriculture Division, Industry Statistics Branch, Statistics Canada.
 11.19 Agriculture Division and Manufacturing and Primary Industries Division, Industry Statistics Branch, Statistics Canada.
 11.20 Agriculture Division, Industry Statistics Branch, Statistics Canada.
 11.21 - 11.22 Manufacturing and Primary Industries Division, Industry Statistics Branch, Statistics Canada.
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Chapter 12

Mines and minerals

12.1 Canada's mineral industry

12.1.1 Review of the industry

The Canadian mineral industry experienced moderate growth during 1971 after strong growth in 1970. Disturbed world markets forced Canadian producers to add to their inventories for some commodities, while fuels, potash and asbestos expanded both sales and production. Growth of mineral production in 1971 was 4% compared with 21% the previous year.

Canada's mineral production in 1971 was valued at \$5,968 million compared with \$5,722 million in 1970 and \$4,734 million in 1969. Physical volume contributed to the rise in production with an increase in mine output of about 5%. There was strong growth in the fuels sector in 1971.

Canada produces about 60 different minerals from domestic deposits. The ten leading minerals comprised 83% of total output by value in 1971 compared with 82% in 1970 and 79% in 1969. The 1971 value for the ten leading minerals totalled \$4,974 million with individual values at: petroleum, \$1,357 million; nickel, \$800 million; copper, \$760 million; iron ore, \$555 million; zinc, \$418 million; natural gas, \$343 million; asbestos, \$204 million; natural gas by-products, \$193 million; cement, \$191 million; and sand and gravel, \$153 million. The first four accounted for 58% of the total value of mineral production in 1971 compared to 59% in 1970 (Tables 12.1-12.5).

Canada produces nearly all the minerals needed for modern economies. A few items, such as manganese, chromium, bauxite and tin are imported from lower-cost sources. Canada is the world's largest producer of asbestos, nickel, zinc and silver, is second in potash, molybdenum, gypsum and sulphur, and is among the leaders in production of titanium concentrates, platinum, aluminum, gold, copper and iron ore.

The strength of Canada's mineral industry is based largely on export sales. Apparent consumption of domestic minerals is equivalent to proportions of mineral output ranging from 6% for potash and nickel to about 23% for iron ore and about 41% for copper. Minerals and fabricated mineral products exported in 1971 represented 84% of total mineral production value.

Exports of minerals and fabricated mineral products have led several sustained booms in the Canadian economy in the past and they have been a major factor in the recent surge in Canada's export trade. In 1971, these exports were valued at \$5,039 million or 28% of the \$17,744 million total of merchandise exports. This proportion is typical of the past decade or so, but it has been maintained despite the sudden and very large increase in Canada's automobile trade with the United States in the late 1960s. The level of mineral exports was less in 1971 than in 1970 due to weakened United States demand. Shipments to the European Economic Community (EEC) and Britain are significantly lower than formerly. Proportions shipped in 1971 to different markets (with dollar values in parentheses) were: United States, 59% (\$2,989 million); Britain, 12% (\$595 million); Japan, 9% (\$443 million); and EEC, 8% (\$386 million). Comparable percentages for 1970 were: United States, 55%; Britain, 14%; Japan, 8%; and the EEC, 11%. Japan purchased 11% more from Canada in 1971 than in 1970 and the EEC, 31% less.

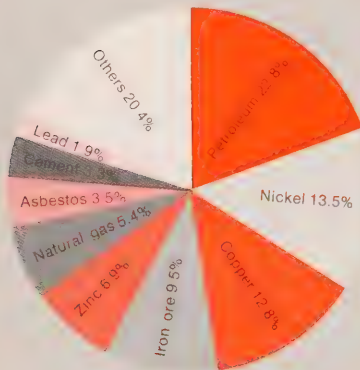
In 1971, the contribution by value of the various classes of products to the total value of production was as follows (1970 figures in parentheses): fuels 34% (30%); metallics 49% (54%); non-metallics 8% (8%); and structural materials 9% (8%). The slight shift in significance of the classes reflects the relative stability of the demand for domestic structural materials, the continued easing of prices in some non-metallics, the strong growth in exports of fuels and the reduced production of metallics.

Canada leads the world in mineral exports, and ranks immediately behind the United States and the Soviet Union in mineral production. This sector has always been most important in Canada's economic development and is still the main force in the northward advance of Canada's frontiers of population and economic activity.

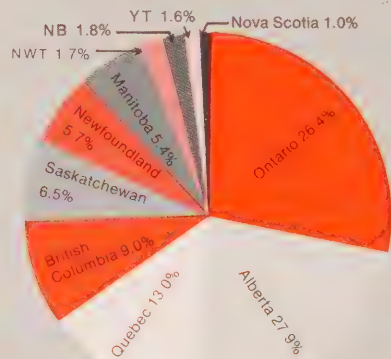
Prices for minerals presented a mixed picture in 1971. For copper and nickel, which bulk

Mineral production, 1971

Percentage of total by commodity



Percentage of total by province



Source: Department of Energy, Mines and Resources

so large in Canada's exports, prices were historically high but the price for copper dropped late in the year from 53¾ cents per lb. to 50½ cents. In the United States, copper brought 53 cents per lb. but after some fluctuation, ended the year at 50¼ - 50½ cents.

Nickel prices in 1971 were stable in Canada and the United States, at 137½ cents and 133 cents per lb., respectively. Iron ore prices were generally mixed in 1971, Lake Erie base prices advanced by as much as 5% while European prices held mostly at 1970 levels. After several years of increasing prices, the price for ferro-alloys and other additives levelled off in 1971 and in some cases even decreased in a buyer's market. Aluminum prices in Canada were stable at 29½ cents per lb., with the United States' published price at 29 cents, although prices for some contracts were much lower due to the over-supply situation. The price of zinc in Canada and the United States rose from 15 cents per lb. to 17 cents during 1971. Lead and silver prices declined further, lead dropping by 1 cent to 13½ cents per lb. and silver fluctuating from a high of \$1.752 per oz. t. to a low of \$1.288. Among non-metallics, asbestos prices remained stable during 1971. Sulphur prices reached an all-time low of \$7.50 per ton average for the year, while potash prices improved to an average of 37.09 cents per unit K₂O equivalent.

Petroleum (with natural gas), nickel, copper, iron ore and zinc together contribute three quarters of the total Canadian mineral output value and their significance calls for some discussion of their scale of operations, production locations, markets, new sources and prospects.

Petroleum, comprising crude oil and natural gas production and refining, is Canada's largest mineral industry. Domestic production and exports are small in the context of the world's industry but are of very great importance to Canada. This industry's growth in the past two decades has had important effects as a factor in the balance of payments, as a source of revenue to the several levels of government, and as a large component of engineering-construction activity.

In 1971, total petroleum production (crude oil, gas and by-products) was valued at \$1,893 million, an increase of 16% over the 1970 value of \$1,632 million. Crude oil production is concentrated in Alberta, with Saskatchewan in second place and only minor production elsewhere. The pattern of crude oil distribution in Canada reflects the National Oil Policy which allocates markets west of the Ottawa Valley to Canada's mid-continent producers, while Quebec and Maritime markets are supplied by overseas oil. Transportation costs from mid-continent producers to eastern markets are quite significant and the industry is not as

low-cost a producer as is Venezuela or the Middle East. The mid-continent producers have an export market in mid-continent United States which in 1971 almost equalled in volume Canada's imports in the East. Thus, Canada produces oil almost equivalent to the total domestic needs but achieves in domestic markets the lowest-cost supply compatible with balance-of-payments aims. Alberta oilfields are producing much below capacity and the region's economic reserves of oil will last perhaps 20 years at current depletion rates. Canada's North is the focus of much optimism for large-scale oil finds, and exploration continues there.

Natural gas is an important domestic product and a valuable and growing export. Broadly speaking, gas is found where oil is found — mainly in the western provinces and Canada's Arctic. Natural gas production and sales are often reported in volume terms (thousands of standard cubic feet) but to compare, for example, oil and gas output, it is preferable to report equivalent thermal value, or values in dollars which do tend to reflect thermal values. In dollar terms, the gas and gas by-products production of Canada in 1971 was \$536 million, compared with oil output of \$1,357 million; this represents a gas value of about 40% of oil value. In 1970 gas value was \$475 million or 41% of an oil value of \$1,156 million. This trend may continue; for both products, current scale and future growth depend significantly upon access to the United States market. In the case of gas, United States import policy seems focused on prices paid rather than on quantities imported, reflecting the scarcity of gas reserves and supplies within that country.

Canada has large reserves of gas. Western reserves are adequate for about 25 years at Canadian 1971 gross-production rate, and the economics of Arctic transport are at present more favourable for gas than for oil so that the known Arctic gas reservoirs can be viewed with confidence as economically valid reserves. Production in Canada is increasing rapidly with growth of domestic and export markets. Domestic sales volume was 9% above 1970, and comprised 46% of the 1971 net domestic supply; exports, all to the United States, were 17% above 1970.

Gas volumes data give, among other information, gross new production volume, net withdrawals volume, net domestic supply, and total demand. The first is new gas obtained from wells which in 1971 totalled 2,825,000 million standard cubic feet (MMcf); the second was 2,500,000 MMcf after waste, flaring and reinjection deductions; the third was 2,195,000 MMcf after process shrinkage and storage-reservoir inventory adjustments and, with imports in 1971 being insignificant, this net domestic supply is effectively equivalent to total domestic supply and total domestic demand. Domestic sales plus exports fall short of total or net domestic supply by an amount that constitutes change in gas in process, change in pipeline inventory, etc. In 1971, the sum of domestic sales and exports was 1,912,000 MMcf, 13% above the 1970 total. This marketable-production volume of 1,912,000 MMcf is much lower than the gross production total of 2,824,000 MMcf. Pipeline systems linking western and eastern provinces now have ample capacity following major additions in recent years.

Nickel was in second place among Canadian minerals produced in 1971. The year was a difficult one for world nickel producers as an over-supply situation developed. Nickel inventories reached abnormally high levels but prices remained steady throughout the year at 137½ cents per lb. After appreciable mine expansion during 1970, producers announced cutbacks in production for 1971-72 in order to balance supply with demand. Canada maintained its position as the leader in nickel production, accounting for about 41% of total world production, with a value of \$800 million.

Copper was third by value of output among the minerals in 1971. Production of recoverable copper from Canadian mines rose to a new record level of 721,000 tons, an increase of 7% from 673,000 tons in 1970. The international over-supply of copper continued but was not serious because production problems in Zambia and Chile kept output below expected levels. Copper is produced in every province and territory except Prince Edward Island; Ontario dominates output, Quebec and British Columbia together nearly equal Ontario and others are much less significant.

Iron ore production and consumption were both down in 1971 due to decreased demand in Europe, the United States and the domestic market. Production was valued at \$555 million. Of the 33.6 million long tons exported, the United States took 20.1 million (23.8 million in 1970), Britain 4.7 million, western Europe 5.7 million and Japan 3.1 million. Shipments to Japan increased by 41% in 1971, from 2.2 million in 1970. Canada's iron ore industry seems to

have a strong future; immediate plans for expansion include new and enlarged processing facilities. Present Canadian capacity is 47.3 million long tons mine output, with 25.5 million long tons pelletizing capacity. There are four producing provinces: Newfoundland (Labrador), Quebec, Ontario and British Columbia; Newfoundland (Labrador) production dominates while in British Columbia its importance is minor.

Zinc production in 1971 achieved a record value of \$418 million while production (all forms) fell to 1.3 million tons, a decrease of less than 1% from 1970. Canada remained the world's leading mine producer, accounting for 30% of total free-world production.

The value of production of mineral fuels — coal, natural gas, natural gas by-products and crude petroleum — rose to \$2,014 million in 1971. Encouraging changes have occurred in the domestic coal industry during the past two years: application of improved transport and mining techniques has revived the western coal industry and improved prices are increasing revenues. While output and revenues increased nationally, growth was mostly in the West. National output in 1971 was 18 million tons (17 million in 1970) with a value of \$122 million (\$86 million in 1970). Eastern output was down 3%, while western output increased by 13% in 1971. Canada is a net importer of coal; 1971 exports were 8 million tons but imports totalled 18 million tons. Exports should reach more than 15 million tons by 1972 under present contracts, mainly with Japanese iron and steel mills, and a balance in external trade in coal may be in sight.

The volume of mineral production index, which measures the mining industry's absolute growth (1961 = 100), increased 4.6% in 1971 to 186.8 from 178.5 in 1970; the 1960-71 average annual rate of growth was 5.7%. In comparison, the volume index of total industrial production increased 4.0% to 182.6 from 175.5 in 1970 and the average annual rate of growth in the period 1960-71 was 6.3% (Table 12.3).

Investment in new installations, equipment and machinery in Canadian mines, quarries and oil wells (including pipelines) was \$1,700 million in 1971 compared with \$1,350 million in 1970 and \$1,180 million in 1969. The forecast for 1972 was \$1,660 million. Although new capital investment can fluctuate greatly from year to year, repair expenditures which usually rise fairly steadily over time would add a further \$490 million to the 1971 new capital value.

The rapid increase in aggregate investment for the mining sector in the years since 1965 conceals declines of new investment in some activities and differences in experience in different regions of Canada. In metal mining, the annual new capital investment was below \$200 million until 1965 but by 1971 it had exceeded \$800 million. Iron mines investment was relatively limited in 1969 and 1970 but in 1971 it more than quadrupled to \$225 million. Other metal mining investment increased from \$399 million in 1970 to \$554 million in 1971. New capital investment in non-metal mining (excluding oil and gas) was less than \$100 million a year up to 1965 but an investment boom in asbestos, potash and coal brought the annual spending up to \$240 million in both 1968 and 1969. Since then this investment has declined to \$160 million for 1971, with a forecast of \$108 million for 1972.

New capital investment in the petroleum and gas industry (mineral fuels excluding coal) climbed fairly steadily from the \$200-to-\$300 million-a-year rate of the early 1960s, to \$640 million in 1970 and \$733 million in 1971; the 1972 forecast was \$730 million. Within this aggregate there was a shift in emphasis; recently, spending on exploration has increased as new finds have been reported in Canada's frontier areas. This investment is expected to increase substantially in the next few years.

Minerals (excluding oil or gas) investment in individual provinces reflects the regional concentration of mineral resources and the medium-term market prospects for those resources. In the Maritime Provinces, absolute values of investment are small and spending patterns are not clear. In Newfoundland (Labrador) iron mine investment is again heavy after a lull. Quebec investment is at moderate levels with increases in asbestos and iron ore; through the 1960s, Quebec mining investment was uneven but iron ore mining and processing expansions are now taking place. In Ontario, the investment expansion that began in 1965 is still accelerating; iron ore, copper-zinc and nickel-copper spending booms have succeeded one another. In the Prairie Provinces, investment has passed through sharply defined phases in the recent past; at present it is improving. Investment in primary industry in British Columbia was stronger than ever in 1971. Coal, particularly, and metals and asbestos expansions account for the fact that British Columbia mining construction has exceeded even that of Ontario from 1968 to 1971.

In terms of output value of minerals the national scene is dominated by Ontario and Alberta. The significant impact of nickel and oil gave these producers about 54% of the total value of minerals output in 1971; Ontario produced 26% of the total in 1971 as against 28% in 1970. In 1971, Quebec contributed 13% and British Columbia 9%; Saskatchewan, Newfoundland (including Labrador), and Manitoba were in the 5-to-7% range and the contribution of each of the three Maritime Provinces and the two territories was less than 2%. In 1971, Alberta produced 78% of the national fuels value, Ontario 44% of the national metallics value, and Quebec 42% of the national non-metallics value (Tables 12.6-12.8).

Newfoundland (including Labrador). Mineral production value in Newfoundland (including Labrador) in 1971 was \$343 million compared with a 1970 value of \$353 million, a decrease of 3%. In 1971, iron ore output reached 21.9 million tons compared with 23.6 million tons the year before; copper output was 14,000 tons, down from 15,000 tons partly because one mine suffered a five-month strike; asbestos output was 69,000 tons compared with 63,000 tons; the value of fluorspar production decreased to \$2.8 million from \$4.6 million.

Prince Edward Island. Mineral output in this province is confined to structural materials, mainly sand and gravel valued at about \$980,000 in 1971.

Nova Scotia. Total mineral production value in 1971 in Nova Scotia was \$60 million, a level above those of 1969 and 1970 but below the levels of the mid-1960s. Coal output again declined in 1971 to 2 million tons from 2.1 million tons in 1970, as two mines were closed in the province; a new mine at Lingan is scheduled to start producing by 1974. Non-metallic mineral output, apart from coal, was valued at \$21 million, compared with the 1970 value of \$19 million. Output of metallics — lead and silver — fell off sharply from 1970 levels.

New Brunswick. Mineral production value in New Brunswick in 1971 amounted to \$107 million compared with \$105 million in 1970 and \$95 million in 1969, close to 85% of it in metallic ores and products. Although the coal industry has declined in recent years, production rose to 517,000 tons in 1971 due to increased local demand for thermal power generation. Zinc and lead, which comprise one half and one sixth, respectively, of the value of New Brunswick mineral production, are the principal metals. Output of both these metals rose rapidly over the 1968-70 period but less so in 1971; although more lead was produced in 1971 than in 1970, the value was down. Production of zinc, lead, copper and silver is centred around Bathurst.

Quebec. Total mineral output value in Quebec was \$770 million in 1971, an increase over 1969 but a decrease from 1970 values. Metallics constitute more than one half of the annual product, non-metallics one quarter and structural materials one sixth. Fuels production in this province is insignificant.

Metallics produced in Quebec are mainly copper and iron ore and the non-metallic output is almost wholly asbestos. Copper, valued at \$195 million in 1971, accounted for one quarter of all Quebec mineral output and iron ore, at \$111 million, one seventh. Production of both minerals decreased in 1971. Zinc production, at \$58.4 million in 1971, is also a significant contributor to the mineral output of Quebec but tonnage has declined somewhat from 1970. Asbestos production has been fairly stable in output volume since 1968 but revenues were below those of 1970. In Canada, titanium dioxide is produced only in Quebec and is a valuable product with firm world markets; production value increased from \$35 million in 1970 to \$39 million in 1971.

Ontario. Ontario produces minerals valued at more than \$1,500 million annually. Metallics form most of this output and this group shows the greatest recent growth rate although the value was 5% lower in 1971 than in 1970. Nickel is the most important of the metallics, contributing 38% of the province's total value of minerals output in 1971, copper followed with 20%, iron ore with 9% and precious metals with 7%. The range of output is extremely diverse, more so than in any other province of Canada, and the value of metallics produced, not including nickel and copper, is almost as great as the total output value of minerals in Quebec.

Output of fuels in Ontario is relatively small and the non-metallics produced are principally salt, nepheline syenite, asbestos, sulphur and quartz in small quantities. Structural materials produced in 1971 increased in value to \$211 million from \$189 million in 1970.

Manitoba. Manitoba's mineral production in 1971 was valued at \$330 million, a little below the 1970 total. Of the 1971 value, metallic minerals comprised 86%, structural materials 8%,

and fuels 5%. Nickel contributed 74% and copper 21% of the total metallics value of \$284 million.

The rapid rise of mining capacity in Manitoba over the last few years is attributable mainly to recent expansions at the nickel-copper mines of Inco at Thompson. Falconbridge also started its Manibridge mine and mill at Wabowden during the year. However, producers suffered from the world over-supply situation for nickel and 1971 saw substantial additions to inventories and some production cutbacks. Manitoba nickel production in 1971 was 77,000 tons, one quarter of the total Canadian output. Zinc produced in Manitoba was valued at \$8.4 million in 1971, substantially below the level of previous years because of a five-month strike at the Flin Flon and Snow Lake operations of Hudson Bay Mining and Smelting Co., Limited.

Saskatchewan. Saskatchewan's mineral production, of course, reflects the limitations imposed by its geography. In contrast to the more easterly provinces, the Canadian Shield formation comprises much less than one half of Saskatchewan's area, nor does Saskatchewan have the Cordillera and related resources of the more westerly provinces. Saskatchewan, therefore, is mainly a non-metallic minerals producer, supplying principally oil, natural gas and potash; zinc, copper and uranium are of useful but minor annual output value. Oil output is stable, and uranium output continues to decline, but the restoration of order in potash markets through regulation of supply in both Saskatchewan and New Mexico has raised revenues substantially for that product.

The value of total mineral output in Saskatchewan in 1971 was \$409 million, a \$30 million increase over 1970 attributable to price increases in potash and increased petroleum output. The broad picture in the province for the past few years has been one of stable annual value of output. Of the total 1971 output, the fuels class contributed 58%, non-metallics (almost all potash) 36% and metallics about 4%.

Alberta. Alberta is Canada's major oil producer as reflected in the steady increase of its share of the national output which has climbed from 69% in 1967 to 75% in 1971. Production could be even greater since the developed fields are now being operated below capacity. At present production rates, proven economic reserves of oil total about 20 years' supply. Current exploration in Alberta is at a moderate level with new field exploration awaiting the outcome of economic and environmental studies on new sources of oil above the Arctic Circle.

Alberta's total minerals output in 1971 was valued at \$1,640 million of which fuels accounted for \$1,575 million; one third of the remainder was fuel by-product sulphur and two thirds was structural materials – mainly cement, sand and gravel – valued at \$42 million. Crude petroleum production amounted to 372,000,000 bbl, 10% higher than in 1970. Net new production of natural gas in Alberta in 1971 totalled 2,067,000 MMcf compared with 1,870,000 MMcf a year earlier, reflecting continuing strong demand for gas in the mid-continental United States.

Alberta's southwest produces useful amounts of coal, the value of the 1971 output being \$42.4 million compared with about \$28 million in 1970 and \$12 million in 1967 and 1968. The rise in coal production in Alberta is due mainly to increasing demand from Japanese industry.

British Columbia. Total minerals output in British Columbia in 1971 was almost \$544 million compared with \$490 million in 1970 and \$434 million in 1969; the average annual growth in the 1968-71 period was 13%. The range of products is very wide; 57% is provided by metallics, 28% by fuels, 11% by structural materials and 4% by other non-metallics. Copper is especially significant, comprising over one fourth of the total output value of minerals. Other valuable metallics are, in order of importance, zinc, molybdenum, lead, iron ore and silver. Even a little tin is produced, as concentrate, when world prices are high. Non-metallic minerals include asbestos and sulphur; crude oil, natural gas and coal are produced in considerable amounts.

Copper production has climbed rapidly; the 140,000-ton output in 1971 represented a 33% increase over that of 1970; copper revenues were up almost 21%. In 1971, molybdenum production decreased by almost one third in volume as compared with 1970 output levels to 11,000 tons (contained molybdenum basis) of concentrate. The coal mines developed over the past few years recorded a sharp increase in value of production to \$45 million in 1971 as against \$26 million in 1970. British Columbia coal is almost all high-unit-price bituminous coal of coking quality. The enlarged production of 1971, as well as anticipated future expansion, is to meet Japanese requirements.

The rapid growth of mine and mill operations in the province will be given added impetus as a result of the announced policy of the British Columbia government on the smelting of ores. Producers will be expected to process within the province a significant proportion of their mineral output.

Yukon Territory and Northwest Territories. Yukon minerals production comprises metallics — mainly zinc, lead, copper and precious metals — and asbestos. Output is not large by national standards but it is increasing rapidly. In 1971, the \$93 million total output included zinc, \$39 million; lead, \$29 million; copper, \$3 million; silver, \$9 million; and asbestos, \$12 million.

Northwest Territories mineral output, valued at \$116 million in 1971, consists almost wholly of metallic minerals plus a little petroleum and natural gas. Output value was fairly steady in the 1968-70 period, but declined by 14% from 1970 to 1971. Zinc and lead comprised 85% of the output value.

12.1.2 Metals

Nickel. Canada's production of nickel in 1971 amounted to 294,341 tons valued at \$800,064,068, a 4% decrease in both quantity and value from 1970 (Table 12.9). Production was cut back in response to declining world nickel demand and accumulating inventories. The principal Canadian producers, The International Nickel Company of Canada, Limited (Inco) and Falconbridge Nickel Mines Limited, initiated programs during the year to reduce output and defer completion of new and expansion projects. Canada's position as the world's leading producer — 54% of world nickel production in 1971 (excluding the Sino-Soviet bloc) — remained intact but its proportion is declining with the introduction of new production from other countries, mainly the Dominican Republic, New Caledonia, Australia, the Philippines and Botswana.

In Ontario, where 73% of Canada's nickel was produced in 1971, Inco operated 14 mines, five concentrators and two smelters in the Sudbury area and a nickel refinery at Port Colborne. Inco brought three new mines and the 35,000-ton-per-day Clarabelle concentrator into operation during 1971 but suspended production at the Copper Cliff mill, the Creighton concentrator and the Murray mine. The company is developing one new mine in the Sudbury area and one near Shebandowan. The new Inco pressure carbonyl nickel refinery is being prepared for 1973 production. Falconbridge operated eight mines, four concentrators and a smelter, and is developing four new mines. Work on the new mines was deferred in 1971. Texmont Mines Limited began mining ore from its nickel deposit near Timmins in July 1971. Texmont concentrate is being stockpiled. At Werner Lake in northwestern Ontario, Consolidated Canadian Faraday Limited continued production and shipped bulk nickel-copper concentrate to Inco. Noranda Mines Limited is preparing its 700-ton-per-day Langmuir mine, near Timmins, for start-up in 1973.

In Manitoba, where 26% of Canada's nickel was produced in 1971, Inco operated an integrated nickel installation at Thompson for mining, concentrating, smelting and refining. Inco opened two new mines in 1971 but closed the Soab mine. Falconbridge commenced production in 1971 from its 1,000-ton-per-day Manibridge project, a mine and concentrator operation near Wabowden. Sherritt Gordon Mines Limited at Lynn Lake produced nickel concentrate for shipment to the company's refinery at Fort Saskatchewan, Alta. Supplementary feed for the refinery was obtained from Australia and New Caledonia. Dumbarton Mines Limited at Bird River trucked nickel-copper ore to the Faraday concentrator.

One mine produced nickel in Quebec in 1971 — Renzy Mines Limited in Hainault township. In British Columbia, Giant Mascot Mines Limited, near Hope, resumed operations after rebuilding surface facilities which were destroyed by fire in 1970. Giant Mascot ships bulk nickel-copper concentrate to Japan.

Copper. The production of recoverable copper from Canadian mines amounted to 721,430 tons valued at \$760,016,078 in 1971, an increase in volume of 48,713 tons but a decrease in value of \$19,226,325 over 1970 because of lower world prices for copper. Production of refined copper fell to 526,401 tons from 543,071 tons in the same period and consumption declined 16,785 tons to 221,053 tons. Exports of copper in concentrates increased by 45,739 tons to 224,858 tons and exports of refined copper increased by 19,960 tons to 312,363 tons.

Six smelters for the reduction of copper and nickel-copper ores and concentrates were

operated in Canada. In the Sudbury district of Ontario, The International Nickel Company of Canada, Limited (Inco) operated smelters at Copper Cliff and Coniston, and Falconbridge Nickel Mines Limited produced nickel-copper matte at its Falconbridge smelter. Hudson Bay Mining and Smelting Co., Limited at Flin Flon, Man., treated ores and concentrates from its own and other mines in Manitoba and Saskatchewan. Ores and concentrates from most of the copper mines in Ontario, Quebec and Newfoundland were processed at the Noranda smelter of Noranda Mines Limited and the Murdochville smelter of Gaspé Copper Mines, Limited, both in Quebec. Major expansion programs were under way at both the Noranda and Murdochville smelters. Electrolytic copper refineries were operated by Inco at Copper Cliff and by Canadian Copper Refiners Limited, a subsidiary of Noranda Mines, at Montreal East, Que.

Ten new mines producing copper were brought into operation and ten mines were closed during 1971 in Canada; net production capacity was increased by about 40,000 tons of contained copper during the year.

Copper production in Newfoundland in 1971 totalled 13,980 tons valued at \$14,762,654 from four producing mines, one of which closed late in 1971. In New Brunswick copper output increased to 10,266 tons valued at \$10,841,025 from 8,022 tons valued at \$9,313,833 in 1970. In Quebec, production reached 184,823 tons valued at \$195,173,430, compared to 172,640 tons and \$200,443,882 in 1970. About 30 mines were operating during 1971, the main centres of production being at or near Rouyn - Noranda, Val d'Or, Matagami, Chibougamau, Murdochville and Stratford Centre. The Delbridge, Manitou-Barvue and Quemont mines were closed in 1971, while production commenced at the Millenbach mine of Falconbridge Copper Limited.

Copper was produced at a number of mines in Ontario in 1971, the main operations being the nickel-copper mines of the Sudbury district, copper-zinc and copper mines near Timmins, and copper-zinc mines near Manitouwadge. Mine production amounted to 302,370 tons valued at \$317,527,865, an increase of 7,277 tons and a decrease of \$23,311,917 over 1970. One new small mine was opened during the year and two were closed; two mines were being developed for production by the end of 1972. Inco restricted its production of nickel by 22% but the effect on copper production was much less.

Most of Manitoba's 1971 production of 55,264 tons of copper valued at \$58,356,093 came from the mines of Hudson Bay Mining and Smelting Co., Limited at Flin Flon and Snow Lake and, to a lesser extent, from the Lynn Lake mines of Sherritt Gordon Mines Limited. Hudson Bay operated seven mines but operations were shut down by a five-month strike during the first half of the year. Sherritt Gordon production came from its Fox Lake copper-zinc mine and its Lynn Lake nickel-copper mine. Copper concentrates from the Inco mines at Thompson were shipped to Copper Cliff in Ontario for smelting and refining. Copper production in Saskatchewan was from the mine of Anglo-Rouyn Mines Limited near La Ronge and from Hudson Bay's Flexar mine and that portion of the Flin Flon orebody on the Saskatchewan side of the provincial boundary. Production in 1971 was 11,146 tons, 8,327 tons less than in 1970; the value was \$11,769,842, \$10,839,338 less than in 1970.

Production of copper in British Columbia in 1971 amounted to 140,310 tons valued at \$148,130,684, an increase of 34,488 tons and \$25,301,838 over 1970. Two new mines started production in 1971: Utah Mines Ltd., at Coal Harbour on Vancouver Island and Placid Oil Company at Cranbrook. In addition, Giant Mascot Mines Limited brought its new concentrator on stream replacing the one destroyed by fire the previous year. One mine was closed for economic reasons.

Production of copper in the Yukon Territory, all by Whitehorse Copper Mines Ltd., Whitehorse, declined by 5,314 tons in 1971 to 2,566 tons valued at \$2,709,696; production was suspended pending a change in mining methods. In the Northwest Territories copper is obtained as a by-product in the processing of high-grade silver ores.

Iron ore. Iron ore shipments amounted to 43,312,273 tons (42,278,733 dry long tons valued at \$555,135,728) in 1971, down 4,484,112 tons from 1970 when shipments reached an all-time high. [The wet long or gross ton (2,240 lb.) is used here for all shipments of iron ore unless otherwise noted.] Exports were down by 5,083,484 tons to 33,562,557 tons while domestic shipments rose sharply by 599,372 tons to 9,749,716 tons. Production exceeded shipments by 2,346,794 tons and stocks at mines and ports, estimated at 8,400,000 tons at the end of 1970, increased accordingly.

The reduction in exports was mainly a reflection of lower steel production in western Europe and the United States, Canada's largest markets, notwithstanding increased shipments to Japan. Imports were down 764,000 tons to 1,362,000 tons in 1971. A United States iron and steel producer, Jones & Laughlin Steel Corporation, sold the Adams Mine to Dominion Foundries and Steel, Limited in September; this resulted in converting 159,000 tons of potential exports to domestic shipments.

Iron ore consumption was down from 1970 by 769,000 tons to 10,896,000 tons and roughly paralleled the decrease of 470,000 net tons in pig iron production to 8,616,000 tons. However, steel production at 12,170,000 net tons was down only 177,000 tons from the year before. This disproportionate decrease compared to that for pig iron production is attributable to a decrease in the hot metal/scrap iron ratio and an increase in electric furnace steel production using scrap. Blast furnace problems experienced by three Ontario integrated producers rather than lack of demand accounted for the lower pig iron production. Domestic iron ore shipments plus imports exceeded consumption by 215,000 tons and stocks at Canadian iron and steel plants rose accordingly.

Canadian annual iron ore production capacity at the end of 1971 totalled 47,650,000 tons including facilities for 25,330,000 tons of pellet and reduced iron. The industry, which began a period of slow growth in 1969, added only 280,000 tons capacity in 1970 and 300,000 tons in 1971. Closure of Coast Copper Company, Limited's 80,000-ton-per-year iron ore recovery plant on Vancouver Island resulted in a loss of capacity in mid-1970.

The 300,000-ton-per-year reduced iron ore plant of Falconbridge Nickel Mines Limited began tune-up operations in early 1971 but at year-end was still encountering new-process difficulties. In May 1971 Inco announced that because of new pollution abatement requirements, increased construction costs and marketing factors it would cancel the nearly completed 250,000-ton-per-year pellet plant expansion. Furthermore, production of pellets, currently around 670,000 tons per year, well below Inco's rated capacity of 850,000 tons per year, will decrease to some 600,000 tons to meet the new Ontario regulations on sulphur dioxide emissions.

Three major projects in Quebec and Labrador were under construction during 1971: expansion of the Iron Ore Company of Canada's 10,000,000-ton-per-year Labrador City concentrator in Newfoundland (Labrador) and construction of its new 6,000,000-ton-per-year concentrator and pellet plant at Sept-Îles, Que., and Quebec Cartier Mining Company's new 16,000,000-ton-per-year concentrator at Mount Wright, Que.

Production of iron ore, including by-product ore, totalled 45,659,067 tons in 1971 compared with 46,984,342 tons in 1970 and 37,047,527 tons in 1969. Iron ore and by-product ore were produced by 17 companies at 18 locations with ten operations in Ontario, three in British Columbia, two in Quebec, two in Newfoundland (Labrador) and one in Quebec - Labrador.

All provinces except British Columbia reported a decrease in shipments in 1971. Quebec, the second largest producer, recorded the largest loss with shipments of 11,042,000 dry tons, 2,394,000 tons less than in 1970, followed by Newfoundland with 19,533,000 dry tons, down 1,502,000 tons. Ontario shipments were down fractionally by 580,000 dry tons to 9,981,000 tons while British Columbia shipments rose slightly by 46,000 dry tons to 1,723,000 tons.

In Quebec and Labrador, production exceeded shipments, and stocks at the mines and shipping ports were up by 2,300,000 tons. Shipments from Iron Ore Company of Canada, the largest Canadian producer, were down 2,915,000 tons from 1970 and totalled 17,193,000 tons, which consisted of 9,476,000 tons of pellets, 5,922,000 tons of direct-shipping ore (from both Quebec and Labrador) and 1,795,000 tons of concentrate. Canada's second largest producer, Quebec Cartier Mining Company, operated at capacity rate but shipped only 7,864,000 tons compared with 8,870,000 tons in 1970. After completing modifications to its regrind mill from wet to dry, Wabush Mines reached capacity production of 6,100,000 tons for the first time but shipments were only 119,000 tons above the 1970 level of 5,478,000 tons. Hilton Mines, a Quebec producer about 40 miles from Ottawa and the only active Quebec iron mine not on the Labrador Trough, operated at slightly above its rated capacity during the year but shipments at 869,000 tons were fractionally lower than in 1970 when shipments were also made from stockpile.

In the Atikokan area of Ontario, Caland Ore Company Limited closed part and then all of

its operations from about August 15 to October 24 because of very low demand from its United States parent, Inland Steel Company, which takes the entire output. As a result, shipments were down by 672,000 tons to 1,471,000 tons comprising 859,000 tons of pellets and 612,000 tons of Warren Coarse sized ore. The other producer in the Atikokan area, Steep Rock Iron Mines Limited, operated above rated capacity and some 1,416,000 tons of pellets were shipped. For the first time since the mine began production in 1944 no "red ore" or direct-shipping ore was included. Underground mining resumed in 1970 on an experimental basis to tap known resources beneath the open pits and was continued in 1971.

At other Ontario iron mines, operations in 1971 were either at or slightly below capacity production rates. The Adams Mine, purchased on July 31, 1971 by Dominion Foundries and Steel, Limited (Dofasco) from the United States iron and steel producer, Jones & Laughlin Steel Corporation, shipped 1,036,000 tons of which 877,000 tons were exports and 159,000 tons were domestic shipments. This property is operated by Cliffs of Canada Limited, a wholly owned subsidiary of The Cleveland-Cliffs Iron Company, and managing agent of Dofasco's Sherman mine. The acquisition, together with Dofasco's majority interests in the Sherman mine and Wabush Mines, provides the company with its entire requirements of iron ore from Canadian sources. The Griffith mine, which installed fine screening to improve quality and throughput in 1971, shipped some 1,364,000 tons, down fractionally from 1970, while the Sherman mine shipped, all-rail, 1,026,000 tons to Dofasco. Both Marmoraton Mining Company Division of Bethlehem Chile Iron Mines Company and National Steel Corporation of Canada, Limited operated at capacity and shipped 474,000 tons and 681,000 tons, respectively, all to the United States.

The two by-product producers in the Sudbury area of Ontario, The International Nickel Company of Canada, Limited and Falconbridge Nickel Mines Limited, shipped 796,000 tons and 82,000 tons, both up slightly from 1970. Falconbridge's 300,000-ton-per-year reduced iron ore plant began tune-up operations in early 1971, but at year-end was still encountering new-process difficulties.

In British Columbia, both Wesfrob Mines Limited and Texada Mines Ltd. operated at capacity, and 1,255,000 tons and 512,000 tons, respectively, were shipped. With the larger of its two furnaces out of operation during most of the year, Cominco Ltd. consumed only 45,000 tons of iron oxide sinter in the production of pig iron compared with 146,000 tons in 1970.

Exports during 1971 totalled 33,562,557 tons compared with 38,646,041 tons in 1970. The largest market, the United States, took 20,223,000 tons (compared with 23,426,000 tons in 1970) followed by the European Coal and Steel Community with 5,069,000 tons (6,906,000 tons) and Britain with 4,531,000 tons (5,566,000 tons). Shipments to France, which began in 1969, were down slightly from 1970 to 196,000 tons while those to Spain, which became an importer of Canadian iron ore for the first time in 1970, rose sharply from 129,000 tons to 424,000 tons. Exports to Japan were up by 1,047,000 tons to 3,084,000 tons and reflected the increasing importance of Japanese shipments to the eastern producers – Iron Ore Company of Canada and Quebec Cartier Mining Company. The west coast producers, Wesfrob Mines Limited and Texada Mines Ltd., continued to ship all their output to Japan except for a small amount (122,000 tons in 1971) that went to the iron ore reduction plant of Midland-Ross Corp. in Oregon.

The trend toward lower imports accelerated in 1971 as they declined 764,000 tons to 1,362,000 tons, a new low in modern times. The United States provided the bulk of imports in 1971 with 1,272,000 tons all consigned to three integrated iron and steel producers in Ontario. Most of this tonnage went to The Steel Company of Canada, Limited through its 10% interest in The Erie Mining Company, a 10,300,000 ton-per-year pellet producer in Minnesota. Small tonnages of merchant ore are usually shipped to the three producers either for slagging purposes or to cover shortfalls in supply. The Algoma Steel Corporation, Limited has usually been a net exporter of iron ore while Dominion Foundries and Steel, Limited after its purchase of the Adams Mine in 1971 is now self-sufficient. Some 70,000 tons of Brazilian ore went to Sydney Steel Corporation in Nova Scotia but Labrador - Quebec ores have largely supplanted foreign ores in this market.

The level of imports is expected to remain at or below 1,400,000 tons per year until 1974 when a rise to at least 3,000,000 tons is anticipated. The Algoma Steel Corporation, Limited and The Steel Company of Canada, Limited will participate in a joint venture with The Cleveland-Cliffs Iron Company and others in the development of the Tilden mine, a

4,000,000-ton-per-year pellet project near Marquette, Mich. Algoma will take 1,000,000 tons per year, with delivery to begin in 1974, to supply a new blast furnace anticipated to be in operation at that time. Through its joint participation, Stelco will obtain 400,000 tons per year to replace shipments from Hilton Mines where ore reserves are nearing exhaustion.

Lead and zinc. Mine production of lead in 1971 reached a record 405,510 short tons (Table 12.10), 4.2% more than in 1970 and representing about 14.1% of the world total (excluding the Sino-Soviet bloc). Primary refined lead production of 185,555 tons was derived from two plants, one operated by Cominco Ltd. at Trail, BC, where annual capacity is 210,000 tons, and the other operated by East Coast Smelting and Chemical Company Limited, a subsidiary of Brunswick Mining and Smelting Corporation Limited, at Belledune, NB, where annual capacity is 30,000 tons. Exports of lead in ores and concentrates totalled 199,318 tons of contained lead, compared with 165,912 tons in 1970, shipped mainly to Japan, the United States, the Federal Republic of Germany and Belgium. Exports of refined lead amounted to 136,884 tons, 10% less than in 1970, and went mainly to the United States, Britain and India. The price of lead, f.o.b. Toronto and Montreal, increased from 13.5 cents per lb. at the beginning of 1971 to 16.0 cents on April 17, where it remained until October 18 when it dropped to 15 cents for the remainder of the year.

Mine production of zinc in 1971 was 1,249,734 tons (Table 12.11), slightly less than in 1970 and equivalent to over 26% of the world total (excluding the Sino-Soviet bloc). Canada has been the world's largest mine producer of zinc since 1964. In 1971, production of primary refined zinc declined to 410,030 tons from 460,663 tons the year before; output was at 77% of the total rated capacity of Canada's four primary zinc plants. Exports in ores and concentrates, totalling 866,273 tons, went mainly to the United States, Belgium, Japan and the Federal Republic of Germany. Refined zinc exports amounted to 312,227 tons and went mainly to the United States, Britain and India. The domestic producers' price for prime western zinc f.o.b. Toronto and Montreal, increased from 15.0 cents per lb. at the beginning of 1971 to 15.5 cents on April 1 with further increases to 16.0 and 17.0 cents on May 17 and July 27 where it remained for the balance of the year.

Production of lead and zinc in the Yukon Territory continued to increase sharply to 108,000 and 116,000 tons, respectively, as Anvil Mining Corporation Limited operated during the year at full mill capacity of 6,600 tons per day. Production in the Northwest Territories came from Pine Point Mines Limited where the first phase of its underground stope testing program has been completed.

Lead and zinc production in British Columbia was mainly from Cominco Ltd.'s Sullivan mine and 10,000-ton concentrator at Kimberley; the company's Bluebell mine in the Slocan district operated until December when operations were suspended because of exhaustion of ore reserves. It was British Columbia's oldest known lead-zinc mine having been operated intermittently since 1895. Among other lead-zinc producers were Western Mines Limited at Buttle Lake on Vancouver Island; Kam-Kotia - Burkam Joint Venture, Silmonac mines; Reeves MacDonald Mines Limited Annex mine; and Teck Corporation Limited, Beaverdell mine, all in southeastern British Columbia.

Hudson Bay Mining and Smelting Co., Limited recovered lead and zinc from base metal ores of three mines at or near Flin Flon on the Saskatchewan - Manitoba border and five mines near Snow Lake, Man. Sherritt Gordon Mines, Limited continued copper-zinc production at its Fox mine, 30 miles southwest of Lynn Lake, Man. Sherritt Gordon also continued development of its Ruttan copper-zinc deposit in northern Manitoba and planned to bring this open-pit mine into operation in 1973 at a mill rate of 10,000 tons of ore per day.

In Ontario, Ecstall Mining Limited raised the mill capacity of its zinc-copper-lead-silver operation near Timmins to 10,000 tons per day. Ecstall, a subsidiary of Texas Gulf Sulphur Company, remained Canada's largest mine producer of zinc. In 1971 it completed a shaft to 3,050 feet in preparation for underground mining and continued construction of a new electrolytic zinc plant and related facilities which will initially produce about 120,000 tons of refined zinc metal, 230,000 tons of sulphuric acid and 1,000,000 lb. of cadmium metal annually. The plant began operating early in 1972. Other Timmins-district mine producers were Kam-Kotia Mines Limited and Canadian Jamieson Mines Limited. The remainder of Ontario's lead and zinc output came principally from copper-zinc-lead mines at Manitouwadge operated by Noranda Mines Limited, Geco Division, and Willroy Mines

Limited. Selco Mining Corporation Limited, South Bay Division, brought into production its 500-ton-per-day mine and mill at Uchi Lake in the Red Lake district of northwestern Ontario. Mattabi Mines Limited, jointly owned by Mattagami Lake Mines Limited and Abitibi Paper Company Ltd., continued development of its major zinc-copper-silver-lead deposit at Sturgeon Lake, near Sioux Lookout.

In Quebec, relatively small amounts of lead, as well as some zinc, were produced by the Sullivan Mining Group Ltd., at Stratford Centre in the Eastern Townships. Mining companies associated with Noranda Mines Limited accounted for 91% of the zinc output in Quebec, the largest production coming from Mattagami Lake Mines Limited at Matagami. The Millenbach mine of Falconbridge Copper Limited, Lake Dufault Division, Noranda, started operating at its planned rate of 1,100 tons of copper-zinc ore per day in October 1971.

In New Brunswick, the largest zinc-lead producer was Brunswick Mining and Smelting Corporation Limited, which operates mines and a concentrator near Bathurst. Other producers were Heath Steele Mines Limited with a 3,000-ton mill near Newcastle and Nigadoo River Mines Limited operating a 1,000-ton mill in the Bathurst district. The Anaconda Company (Canada) Ltd. suspended production from the copper orebody at its Caribou property near Bathurst because of metallurgical difficulties but continued metallurgical testing and a feasibility study to bring its complex lead-zinc orebody into production. In Newfoundland, both lead and zinc concentrates were produced at the zinc-lead-copper-silver mine of the American Smelting and Refining Company at Buchans.

Gold. Canadian gold production in 1971 was 2,260,730 oz.t. valued at \$79,903,241, a decline in production of 6.1% from 1970 (Table 12.12). The average Royal Canadian Mint price for gold in 1971 was \$35.34 per oz.t., down from \$36.56 in the previous year. In 1971 the Canadian dollar continued to float in the international exchange markets and the value of the Canadian dollar in relation to the United States dollar increased, resulting in a lower Mint gold price. The price of gold on the London gold market varied from a low of US \$37.325 per oz.t. in January to a high of \$43.975 in December.

At the end of 1971, 21 mines were operating. Nine mines closed during the year and one commenced production. All but two of the producing mines received assistance payments on part or all of their production under terms of the Emergency Gold Mining Assistance Act. Because of the increase in the free market price of gold, most of the mines were selling their production on the open market toward the end of the year.

Gold produced from lode gold mines and as a by-product from base metal ores declined in 1971 by 7.1% and 2.4%, respectively. Placer gold production was of minor importance. Lode gold mines accounted for 77.4% of the total output, base metal mines 22.4% and placer mines 0.2%. Ontario was the principal producer, accounting for 50.2% of the total; Quebec and the Northwest Territories accounted for 28.6% and 13.6%, respectively.

Production in Ontario in 1971 declined by 2.4% to 1,133,987 oz.t. from 1,162,042 oz.t. in 1970. Sixteen lode gold mines operated in the province; five closed and one commenced production. Gold recovered as a by-product from base metal ores represented 9.9% of the provincial total. Quebec production declined by 8% to 646,839 oz.t. from 703,015 oz.t. in 1970. Eight lode gold mines operated in the province and three closed. Gold recovered as a by-product from base metal ores was 38.3% of the provincial total.

Gold production in the Northwest Territories in 1971 was from lode mines and amounted to 308,339 oz.t. compared with 332,844 oz.t. in 1970. Gold production in British Columbia was 89,413 oz.t. compared with 101,197 oz.t. in 1970. The only remaining lode gold mine closed. Gold recovered as a by-product from base metal ores accounted for 76% of the provincial total. Placer gold production was small. The combined gold production for Saskatchewan and Manitoba, all as a by-product of base metal ores, was 56,023 oz.t., a decline of 29.6% from 1970. Gold production in the Yukon Territory from placer mining and as a by-product of base metal ores amounted to 14,473 oz.t. Newfoundland and New Brunswick produced a combined total of 11,577 oz.t. as a by-product of base metal processing.

Silver. Canada's mine production of silver in 1971 totalled 46,023,570 oz.t., 1,772,766 oz.t. more than in 1970, to set a new Canadian production record surpassing by over 1,000,000 oz.t. the previous record set in 1968 (Table 12.13). The increase in 1971 came mainly from greater output of several base metal mines producing silver as a by-product, particularly Anvil Mining Corporation Limited which operated at a higher mill rate at its lead-zinc-silver property in the

Yukon Territory. Declines in Newfoundland, Nova Scotia, Ontario and Saskatchewan were more than offset by higher output in the other provinces and the territories. Ontario was again the leading silver-producing province, primarily because of the substantial by-product silver produced at the Kidd Creek base metal mine of Ecstall Mining Limited near Timmins. Base metal ores continued to be the main source of Canadian output, accounting for some 95% of the total. The major portion of the remaining 5% came from silver-cobalt ores mined in northern Ontario and the remainder was by-product recovery from lode and placer gold ores.

Canadian silver production was valued at \$71,796,769 in 1971. The \$10,067,219 reduction from 1970 resulted from lower prices, which fluctuated between \$1.752 and \$1.288 per oz.t. Reported consumption of silver in 1971 was 6,800,000 oz.t. compared with 5,747,068 oz.t. in 1969.

Canadian Copper Refiners Limited at Montreal East, Que., was Canada's largest producer of refined silver, recovering 12,885,000 oz.t. in 1971 from the treatment of anode and blister copper. The silver refinery of Cominco Ltd. at Trail, BC, was the second largest producer, recovering 5,559,823 oz.t. in the processing of silver-bearing lead and zinc ores and concentrates. Other producers of refined silver were The International Nickel Company of Canada, Limited, at Copper Cliff, Ont., from nickel-copper concentrates; and the Royal Canadian Mint at Ottawa, Ont., from gold bullion. At Belledune, NB, East Coast Smelting and Chemical Company Limited recovered by-product silver from lead-zinc concentrates treated in an Imperial Smelting Process blast furnace. Late in 1970, it was decided for economic reasons to close down the Kam-Kotia refinery at Cobalt, beginning April 1, 1971, with final closure date scheduled for February 1972.

The four largest primary sources of silver in Canada in 1971 were: the Kidd Creek zinc-copper-silver mine near Timmins, Ont., operated by Ecstall; the Sullivan lead-zinc-silver mine at Kimberley, BC, operated by Cominco; the silver-lead-zinc mines in the Yukon Territory, about 200 miles north of Whitehorse, operated by United Keno Hill Mines Limited and Anvil Mining Corporation Limited, at Faro, YT. In terms of silver content of concentrates produced, Ecstall recovered 12,768,177 oz.t., Cominco 3,666,522 oz.t., and United Keno 3,007,463 oz.t. Other important mine producers of by-product silver, in declining order of output, included: Noranda Mines Limited, Geco Division, at Manitouwadge, Ont.; Echo Bay Mines Ltd. near Port Radium, NWT; Brunswick Mining and Smelting Corporation Limited near Bathurst, NB; Heath Steele Mines Limited near Newcastle, NB; and Manitou-Barvue Mines Limited at Val d'Or, Que.

Some 2,780,303 oz.t. of silver were derived from silver-cobalt ores mined in the Cobalt-Gowganda area of northern Ontario; the largest producer was again Silverfields Mining Corporation Limited with an output of 1,129,330 oz.t.

Molybdenum. Production of molybdenum in Canada in 1971 was 22,662,732 lb. valued at \$38,367,344 compared with 33,771,716 lb. valued at \$57,140,574 in 1970. Canada was second only to the United States among world producers of molybdenum and supplied approximately 18% of estimated world production (excluding the Sino-Soviet bloc) of 155,400,000 lb.; world mine capacity (excluding the Sino-Soviet bloc) at the end of 1971 was approximately 174,000,000 lb. per year and production in 1971 exceeded consumption by approximately 28,000,000 lb. Capacity is expected to remain in excess of demand for at least five years.

The copper-molybdenum mine, west of Kelowna, BC, of Brenda Mines Ltd. completed its first full production year in 1971. The milling rate was 24,662 tons per day with grade of ore milled being 0.22% copper and 0.062% molybdenum. Recoveries were 89.77% for copper and 86.13% for molybdenum; production for the year was 9,600,000 lb. of molybdenum. Sales in 1971 were 5,100,000 lb. and year-end inventory was 7,600,000 lb. Ore reserves at the end of the year were estimated at 154,000,000 tons averaging 0.182% copper and 0.048% molybdenum.

Endako Mines Ltd. was amalgamated with Placer Development Limited under the name of the latter company in 1971. Production of the Endako Division mine near Endako in central British Columbia was reduced to 75% of the 1970 capacity rate of output in August 1971. The company's accumulation of unsold molybdenum in concentrates was 10,000,000 lb. During 1971 Endako treated 9,051,000 tons of ore at an average grade of 0.162% MoS_2 to produce a total of 14,387,736 lb. of contained molybdenum consisting of 5,163,787 lb. in molybdenite (MoS_2) concentrate and 9,223,949 lb. in molybdic oxide (MoO_3). The Mount Copeland mine of King Resources Company, 18 miles northwest of Revelstoke, BC, produced 969,400 lb. of

molybdenum in concentrate. Noranda Mines Limited, on December 3, 1971, closed the mine of Boss Mountain Division of Brynnor Mines Limited in the Cariboo district of central British Columbia. The closure was due to reduced demand for molybdenum in overseas markets and the large stocks of molybdenum in concentrates already accumulated. Boss Mountain production in 1971 was 2,010,000 lb. of molybdenum in concentrates; ore reserves above the adit level at the end of 1971 were 2,700,000 tons grading 0.25% molybdenum. British Columbia Molybdenum Limited, a subsidiary of Kennecott Copper Corporation, produced 5,100,000 lb. of molybdenum in concentrates. The company's 6,000-ton-per-day mine and concentrator near Alice Arm, operated below capacity due to lack of sales. Utah International Inc. started operation at its Island Copper Mine near Port Hardy on Vancouver Island in October 1971. Design capacity was 33,000 tons per day and annual output was projected at 53,000 tons of copper and 1,900,000 lb. of molybdenum in concentrates. Ore reserves were estimated at 280,000,000 tons averaging 0.52% copper and 0.029% molybdenum.

Lornex Mining Corporation Ltd., managed by Rio Algom Mines Limited, prepared to start production in the first half of 1972 at its large copper-molybdenum property some 33 miles south of Ashcroft in the Highland Valley of British Columbia. The orebody was estimated to contain 293,000,000 tons averaging 0.427% copper and 0.014% molybdenum. Annual production rate was expected to be about 54,000 tons of copper and 3,000,000 lb. of molybdenum. Placer Development Limited continued to develop the property of Gibraltar Mines Ltd., about 35 miles north of Williams Lake in the Cariboo district of British Columbia, for production by mid-1972. The new mine and crushing and concentrating plant have a design capacity of 30,000 tons of ore per day. Ore reserves were estimated at 358,000,000 tons averaging 0.373% copper and 0.016% molybdenite (MoS_2). Several other companies with molybdenum and copper-molybdenum properties in British Columbia examined production possibilities and conducted feasibility studies with a view toward mine financing and development for production.

In eastern Canada, Molybdenite Corporation of Canada Limited continued operation of its mine and concentrator near Lacorne, Que., with provincial government assistance beginning about September 1971. Preissac Molybdenite Mines Limited in the Preissac area, near Cadillac, continued production at a reduced rate for a short period after bankruptcy proceedings were instituted in April. Molybdenum production in eastern Canada, including by-product output at Gaspé Copper Mines, Limited, was 778,003 lb. in 1971.

Uranium. Uranium remained in an over-supply situation in world markets during 1971 as continued overproduction and intense competition combined to force uranium prices to an all-time low. Despite increased sales efforts on the part of Canadian producers, not a single Canadian sale was announced. Not surprisingly, there was a general decline in exploration in Canada during 1971 mainly because of the prevailing poor short-term outlook for uranium and continuing problems respecting foreign ownership of uranium-producing companies in Canada. Of the three Canadian mills operating in 1971 only one was operating at full capacity. A new producer is scheduled to come on stream in 1975.

Denison Mines Limited of Elliot Lake, Ont. began deliveries of uranium in mid-1971 under the new joint-venture stockpiling agreement announced in December 1970 by the federal government. The agreement, to cover the period from 1971 to 1974, will help to assure a stable economy in the Elliot Lake community until major deliveries under Denison's long-term contracts begin in 1975.

Canadian uranium production rose by almost 9% in 1971 to 4,976 tons of U_3O_8 of which 4,107 tons were shipped (Table 12.14). Some 85% of this quantity came from the Elliot Lake area of Ontario with the remainder from the Uranium City area of Saskatchewan. At Elliot Lake, Rio Algom Mines Limited operated its Quirke mill at slightly in excess of its nominal 4,500 ton capacity with most of the total 1,564,000 tons of ore feed coming from the New Quirke mine which opened in 1968. Output from New Quirke has been gradually increased so that by the end of 1971 it was operating at some 6,200 tons a day, well in excess of its original design capacity. Ore reserves at the old Quirke mine were depleted at year-end. Denison's mill, operating at about two thirds of its nominal 6,000-ton-a-day capacity in 1971, treated about 1,387,000 tons of ore. The company continued its program of underground and surface improvements during the year. At Uranium City, Eldorado Nuclear Limited completed the third year of its planned five-year program of reduced production. The 1,800-ton-per-day mill

operated at about 50% capacity, treating a total of 219,391 tons of ore. Operations were suspended temporarily at the Eldorado complex during a strike which lasted from late August to early November.

Eldorado Nuclear Limited, Canada's only producer of refined uranium products, with facilities at Port Hope, Ont., expanded its uranium hexafluoride (UF_6) plant to 2,750 tons of U (in the form of UF_6) in 1971. Eldorado, which is one of five major world refiners, was successful in obtaining new contracts in 1971 for conversion of uranium to UF_6 .

The new uranium project being undertaken by Gulf Minerals Canada Limited at Rabbit Lake, in the Wollaston Lake area of northern Saskatchewan, was in the early stages of pre-production in 1971. This open pit development is expected to be completed by late 1974 with first production early in 1975.

Uranium exploration activity declined further in 1971 and almost no new activity was reported. In eastern Canada, British Newfoundland Exploration Limited (Brinex) continued its efforts in the Makkovik-Kaipokok area of Labrador. Some very minor activity was evident in the Maritimes and also in the Mont-Laurier area of Quebec. Activity in the Elliot Lake - Agnew Lake region of Ontario was significantly reduced. In western Canada, Mokta (Canada) Ltée continued its efforts in the Carswell dome area of northern Saskatchewan and Gulf Minerals carried on with its program along the Wollaston Lake trend. No activity of significance was reported from the Uranium City area of Saskatchewan. Some continued activity was reported in the Northwest Territories, principally in the Baker Lake region and on the Simpson Islands in the eastern arm of Great Slave Lake.

Although the uranium industry suffers in the near-term from over-supply, the long-term outlook remains bright as orders for nuclear generating capacity continue to increase throughout the world. A surge in nuclear plant orders was particularly evident in 1971, notably in the United States but also to a lesser extent in western Europe and Japan. As a result of the increasing number of these nuclear power plants scheduled to come on stream in the future, markets for uranium should develop that will require substantially increased uranium production capacity in Canada by the end of this decade.

Platinum metals. Production of platinum metals in 1971, which amounted to 475,169 oz.t. valued at \$39,821,616, was 7,259 oz.t. and \$3,734,981 less than in 1970. Canadian output is a by-product of nickel refining. When nickel matte is electrolytically refined, the platinoids — platinum, palladium, rhodium, ruthenium, iridium and osmium — are precipitated in the electrolytic tanks as a sludge. The sludge is purified and sent to refineries in Britain and the United States for recovery of the platinum metals. During 1971, major Canadian nickel producers reduced nickel output in an attempt to balance supply with demand with the result that Canadian platinoid production also declined.

About half of the world's output of platinum metals is from the Soviet Union and most of the remainder is produced in Canada and the Republic of South Africa. Platinum has been in short supply throughout the world in recent years but this condition changed to one of over-supply in 1970-71. Potential new end uses for platinum and palladium include catalysts for emission control systems in automobiles. If this market materializes, world demand for these two metals should show renewed growth and world production should increase as well.

Cobalt. Cobalt production in 1971 was 4,323,318 lb. valued at \$9,429,564 compared with 4,561,213 lb. valued at \$10,207,366 in 1970. Canada is one of the world's major cobalt-producing countries, recovering over 95% of its cobalt as a by-product of nickel-copper ores and the remainder from silver-cobalt ores. Approximately 64% of the world (excluding the Soviet bloc) current annual supply of some 24,000 tons is produced, as a by-product of copper recovery, in the Republic of Zaire; the other principal cobalt producing countries are Zambia, Finland and Morocco.

Columbium (niobium) and tantalum. Columbium pentoxide (Cb_2O_5) production in concentrates in 1971 was 2,332,663 lb. valued at \$2,296,962 compared with 4,694,239 lb. valued at \$4,819,951 in 1970. St. Lawrence Columbium and Metals Corporation, with a mine near Oka, Que., is the only Canadian producer of columbium and one of two in the world that produce columbium in pyrochlore concentrates as a primary product; the other is a larger producer with a mine near Araxa in Brazil. St. Lawrence Columbium cut back production early in 1971 because of customers' accumulated stocks of columbium concentrates and ferro-columbium. Production was suspended on June 24 and resumed at less than capacity on

August 9; output was 2,597,667 lb. of Cb_2O_5 during the company's fiscal year ended September 30, 1971 compared with 4,886,957 lb. in the 12 months of the prior fiscal year. Demand for columbium declined in the latter part of 1970 and during 1971. Contract rates for Canadian pyrochlore, f.o.b. mine site, were \$1.15 - \$1.20 per lb. of Cb_2O_5 throughout the year.

Canada's tantalum pentoxide (Ta_2O_5) production in concentrates in 1971 was 449,610 lb. valued at \$2,901,293 compared with 317,024 lb. valued at \$2,251,182 in 1970. Canada's commercial production of tantalum began in 1969 at the Bernic Lake, Man., mine of Tantalum Mining Corporation of Canada, an operating subsidiary of Chemalloy Minerals Limited. This producer was the principal United States supplier in 1970 and 1971, furnishing about 46% of that country's imports; the Republic of Zaïre and Brazil were also major suppliers.

The demand for tantalum declined in 1971 with the temporary recession in the electronics industry. Tantalite ore at the beginning of the year was \$6.75 - \$7.50 per lb. of Ta_2O_5 , 60% basis, c.i.f. US ports, and at year-end the price was \$6.25 - \$6.75 per lb.

Tungsten. Shipments of tungsten in 1971 were 4,624,208 lb. in scheelite (CaWO_4) concentrates compared with 3,726,800 lb. in 1970. Canada Tungsten Mining Corporation Limited produced 2,608,030 lb. of tungsten in concentrates from its mine at Tungsten in the Northwest Territories, about 135 miles north of Watson Lake. Canex Tungsten Division of Placer Development Limited produced 1,364,291 lb. of tungsten in concentrates from its operations near Salmo, east of Trail, in southeastern British Columbia. The 500-ton-per-day capacity Canex mill and concentrator started operation in October 1970.

Cadmium. Cadmium output in 1971, expressed as the sum of refined metal and the recoverable cadmium content of exported zinc concentrates, was 4,063,805 lb. valued at \$7,883,782; corresponding figures for 1970 were 4,307,953 lb. and \$15,336,313. The decrease of almost 49% in value of output was due to much lower prices prevailing in 1971. Cadmium is recovered as a by-product during the smelting and refining of zinc ores and concentrates. Most of the zinc ores in Canada carry minor quantities of the metal, varying from 0.001 to 0.067% of recoverable cadmium, and zinc concentrates contain up to 0.7% cadmium. The largest mine production comes from the Kidd Creek mine near Timmins, Ont., followed by Pine Point Mines Limited in the Northwest Territories, Cominco Ltd. in British Columbia, Hudson Bay Mining and Smelting Co., Limited in Saskatchewan and Manitoba, and the Noranda group of companies in Ontario, Quebec and New Brunswick. Refined cadmium is produced at the electrolytic plants of Cominco at Trail, BC, Hudson Bay Mining and Smelting at Flin Flon, Man., and Canadian Electrolytic Zinc Limited at Valleyfield, Que. Brunswick Mining and Smelting Corporation Limited, which also recovered cadmium, converted its ISF smelter into a lead blast furnace late in 1971 and from that time exported all its cadmium-bearing zinc concentrates for treatment at foreign smelters.

Selenium and tellurium. The value of the 719,000 lb. of selenium produced in 1971 was \$6,531,000, slightly higher than in 1970. Tellurium output decreased sharply to 24,000 lb. valued at \$148,000. These metals are recovered from the anode muds resulting from electrolytic refining of copper anodes at the plants of Canadian Copper Refiners Limited at Montreal East, Que., and The International Nickel Company of Canada, Limited at Copper Cliff, Ont.

Magnesium. The only Canadian producer of primary magnesium is Chromasco Corporation Limited (formerly Dominion Magnesium Limited). Its mine and smelter are at Haley, Ont.; smelting capacity is 12,000 tons annually. Production in 1971 was 7,234 tons, valued at \$5,163,921 and has been declining since 1969 when 10,485 tons were produced. Exports of magnesium metal fell drastically, being only 2,917 tons in 1971 compared with 7,669 tons in 1970. Imports in 1971 were 1,827 tons. Canadian consumption rose to 6,276 tons in 1971 from 4,937 tons the previous year. Total world production in 1971 was estimated at 253,700 tons.

12.1.3 Industrial minerals

Asbestos. In 1971, 1,634,579 tons of asbestos were produced in Canada, 27,065 tons less than in 1970. The value of output decreased about 2% to \$203,999,244, compared with an approximate increase of 9% in the previous year (Table 12.15). Quebec accounts for about 82% of the Canadian production and Newfoundland, Ontario, British Columbia and the Yukon Territory for the remainder. Most of the Canadian production was exported as milled fibre and shorts, providing about 60% of total world exports and about 40% of total world

production. The United States, Britain, Japan and the Federal Republic of Germany together absorbed about 62% of the exports from Canada.

The world outlook for asbestos consumption is favourable and emphasis continues to be placed on the completion of new Canadian projects. In Quebec near Deception Bay, Ungava, development continued at the Asbestos Hill property owned by Asbestos Corporation Limited. An annual output of about 300,000 tons of ungraded fibre will be shipped to Nordenham, West Germany. Asbestos Corporation continued development of the Penhale orebody adjacent to the Normandie mine at Black Lake. Canadian Johns-Manville Company, Limited proceeded with a relocation and reconstruction program that will maintain annual output at a minimum of 600,000 tons of fibre. Carey-Canadian Mines Ltd., East Broughton, was involved with plant expansion that will raise mill capacity from 4,500 to 5,500 tons per day. Bell Asbestos Mines, Ltd., Thetford Mines, continued work on a long-range modernization program. Abitibi Asbestos Mining Company Limited arranged senior financing and management agreements with Brinco Limited to manage a pilot-plant study at the asbestos property situated in Maizerets Township, 50 miles north of Amos. McAdam Mining Corporation Limited arranged with Rio Tinto Canadian Exploration Limited to further evaluate its property. In Ontario, Allied Mining Corporation continued evaluation of its property situated 43 miles south of Timmins.

In British Columbia, Cassiar Asbestos Corporation Limited completed expansion of its mill, which now has a capacity of 120,000 tons of fibre per year. At the Clinton Creek mine, Yukon Territory, additional mill equipment was installed to increase output eventually to about 120,000 tons of fibre per year. Newfoundland's sole producer, Advocate Mines Limited, increased production by about 10% in 1971. Ontario's asbestos production increased in 1971 by about 13% as a result of the combined increase in output from the Reeves mine of Johns-Manville Mining and Trading Limited and from the Matheson mine of Hedman Mines Limited.

Potash. Canada's potash industry is centred in Saskatchewan where production started in 1962 and development was so rapid that in 1971 there were ten mines in operation with a combined annual production capacity of 13,680,000 tons of potassium chloride (KCl) (Table 12.16). Canada has the world's largest production capacity but this rapid development, coupled with a downturn in fertilizer sales, has resulted in a world over-supply of potash. Canada consumes only about 7% of its production, the remainder being exported, principally to the United States.

The world over-supply of potash created serious marketing problems in 1969. In an attempt to at least partly rationalize the market and to prevent mine closures, Saskatchewan promulgated the Potash Conservation Regulations, effective January 1, 1970. Under the regulations, production at each mine is allocated according to plant capacity to meet total market requirements; the industry's operating rate in 1971 averaged 47.8% of capacity. Prices were also regulated under the provincial regulations at not less than 33.75 cents (Cdn.) per unit of K₂O equivalent.

Salt. Salt production in Canada in 1971 totalled 5,541,901 tons (Table 12.17), about two thirds being mined rock salt primarily for snow and ice control on streets and highways and for chemical manufacture, and the remainder fine vacuum salt and salt as brine for use in producing caustic soda and chlorine. There are three rock salt mines, one in Nova Scotia and two in southwestern Ontario; fine salt evaporator plants and brining operations are located in Nova Scotia, Ontario, Manitoba, Saskatchewan and Alberta. Most of British Columbia's salt needs are met by imports of solar salt from Mexico and the San Francisco Bay area.

Sulphur. Canadian production of elemental sulphur in 1971 was 3,149,280 tons valued at \$21,299,520 (Table 12.18); sulphur production in all forms, including sulphur recovered from smelter gases and contained in pyrites, amounted to 3,895,000 tons valued at \$27,063,000. Most of the sulphur produced is extracted as elemental sulphur from sour natural gas in western Canada. Canada is the world's largest producer of sulphur from hydrocarbon sources and is the world's largest exporter. Exports in 1971 decreased 15% below 1970 to 2,647,893 tons. Because of world over-supply and an extremely competitive market situation, the downward trend in prices which began in early 1969 continued throughout 1971, reaching an all-time low of \$5.47 and an average for the year of \$7.22 a ton. Value of elemental sulphur exports decreased accordingly some 30% to \$27,132,000.

For the fourth consecutive year, world producers' stockpiles continued to build up as a result of increased output (notably in Canada and Poland) and reduced consumption especially in the fertilizer industry which uses about 50% of the sulphur marketed. Although recovery of the fertilizer industry in particular and the world economy in general is anticipated during 1972 and 1973, increasing involuntary production of sulphur from such sources as sour natural gas and industrial pollution abatement will have an adverse effect on the restoration of equilibrium within the present decade.

Gypsum. Gypsum production in Canada in 1971 was 6,702,100 tons (Table 12.19). Output in general increased from the previous year, reflecting conditions in the building construction industry in Canada and the United States. Over 70% of Canada's gypsum output is exported to the United States, most of it from Nova Scotia quarries, which account for about 73% of total Canadian production of crude gypsum. The prospects are for increased production in 1972 in support of greater building activity in Canada and the US.

Nepheline syenite. Nepheline syenite was first produced in 1936 and, until recently when Norway started production, remained a uniquely Canadian mineral commodity. "Nepheline syenite" is a rock name that applies to a mixture of minerals, essentially the feldspars and nepheline. The presence of nepheline provides the mixture with a higher content of alumina (Al_2O_3) than has either soda or potash feldspar and makes nepheline syenite more desirable than feldspar in certain applications, especially in the manufacture of glass, for which about 75% of the output is used. However, markets for finely ground material, used in the manufacture of whitewares such as bathroom fixtures, china, ovenware, electrical porcelain and ceramic artware, are growing rapidly. Very finely ground material is being increasingly used as a filler material in plastics, foam rubber and paints. Low-grade material is sold in bulk for use in the manufacture of fibreglass and for glazing on brick and tile.

Production originates from two mines in Canada, both located in Ontario on Blue Mountain, some 25 miles northeast of Peterborough. The deposit is pear-shaped, approximately five miles in length and up to one and a half miles in width. Reserves are very large. In 1971, production, at 517,190 tons, increased marginally from the 486,667 tons produced in 1970 and the value of production correspondingly increased to \$6,206,014 from \$5,801,228 (Table 12.20). Some 80% is exported, most of it going to the United States for use in glass manufacture. In 1971, there was a 5% increase in exports to 404,240 tons valued at \$5,229,000.

Structural materials. The value of all construction undertaken in Canada in 1971 was estimated to be \$15,647,000,000, and that of the production of structural materials, including cement, sand and gravel, stone, clay products and lime, was estimated at \$512,478,366. As a group, structural materials represented about 8.6% of the total value of all mineral production in 1971.

Approximately 9,067,000 tons of cement were produced in Canada in 1971, surpassing the peak output and value attained in 1966 (Table 12.21). Cement is produced in all provinces except Prince Edward Island but nearly 68% of the total 1971 production came from Ontario and Quebec. Total productive capacity of the industry in 1971 was 14,729,000 tons per year, including a new plant at Kamloops, BC. An additional plant, capable of producing up to 1,100,000 tons per year, is under construction at Bath, Ont. for Canada Cement Lafarge Ltd. The company is also expanding its facilities at St. Constant, Que., Havelock, NB and Exshaw, Alta.

Sand and gravel are used principally as aggregates in concrete for building and engineering construction and as fill in road construction. Gravel in boulder sizes is used for riprap and armour-stone construction; other over-sized material is crushed to provide various-sized ranges. Lithologically, sand and gravel deposits are usually composed of material similar to the rock types in which the deposits are found; infrequently, deposits are composed of materials that have been transported some distance from their origin. Exploitation of these low-unit-value materials is greatly influenced by the physical characteristics of the sand or gravel, by the location of the deposit with respect to suitable markets, by the specifications established to differentiate quality products and, more recently, by land use and rehabilitation regulations. (See Table 12.22.)

The stone industry includes those companies producing dimension stone, ornamental stone, crushed stone, whiting, and stone for metallurgical and chemical use. Dimension stone

products account for less than 1% of the total volume of stone production and about 10% of the total value. Crushed stone products, consisting of materials used for concrete aggregate, railway ballast, road metal, rubble and riprap, terrazzo, stucco and artificial stone, etc., account for about 80% of the total volume; the remainder is used in the chemical and allied industries. (See Table 12.23.)

Common clays and shales occur in most regions of Canada and are the principal raw materials used for brick and tile manufacture. Deposits of high-quality argillaceous materials used in the manufacture of such products as papers, refractories, high-quality whitewares and stoneware products are relatively scarce in Canada. Consequently, china clay (kaolin), fire clay, ball clay, and stoneware clay are mostly imported. The final production value of clay products from domestic clays increased marginally to \$51,791,258 in 1970 and decreased to \$48,583,262 in 1971 (Table 12.24).

The table refers to production of such products as brick and tile made from domestic clays. Imports of these products, mainly from the United States, have a low total value. Other clay products such as floor and wall tile, sanitary ware, pottery and dinnerware, and electrical porcelain contain a large proportion of china clay and ball clay. The value of whiteware products produced in Canada from such materials approached \$34,000,000 in 1970.

12.1.4 Petroleum and natural gas

Further indications of the anticipated large oil and gas potential in Canada's frontier areas were given in 1971 by the first significant oil and gas discovery in the east coast off-shore areas and additional discoveries in the Canadian North. Particularly noteworthy were the oil and gas discoveries made on Richards Island in the Mackenzie Delta, the gas discovery at Kristoffer Bay on the west coast of Ellef Ringnes Island, and the oil and gas discovery on Sable Island off the Nova Scotia coast. On the basis of preliminary estimates it would appear that many of these are major discoveries and could be major supply sources in the future. However, until these new-found reserves are connected to market by pipeline, Canadian domestic and export requirements will continue to be met from the producing areas of western Canada where natural gas reserves showed only a modest increase in 1971 and reserves of petroleum and natural gas liquids actually declined. Substantial additions to reserves will be needed if Canada is to meet its own increasing demand and to continue to increase exports of oil and gas to United States markets.

Continuing strong demand for Canadian oil and gas in United States markets contributed significantly to Canadian production gains in 1971 (Tables 12.25 and 12.26). Total production of all liquid hydrocarbons — crude oil plus natural gas liquids — increased by almost 7.1% to 1,585,000 barrels per day (b/d). Net production of crude oil averaged 1,348,000 b/d and field and gas plant production of natural gas liquids reached 237,000 b/d. Alberta production at 1,015,000 bbl, accounted for 75.5% of the total Canadian crude oil output, 2.3% more than in 1970. Production remained static in all producing provinces and territories except Alberta, where there was a 10% increase.

Total liquid hydrocarbon reserves declined to 10,162,000,000 bbl, comprising 8,333,000,000 bbl of crude oil and 1,829,000,000 bbl of natural gas liquids. Reserves added in 1971 totalled 288,000,000 bbl and of this amount, 207,000,000 bbl were attributed to revisions, 63,000,000 bbl to extensions of established fields, and 18,000,000 bbl to new discoveries. Since production was 564,000,000 bbl in 1971, total proven reserves showed a net decline of 276,000,000 bbl for the year. Fully 90% of Canada's proven liquid hydrocarbon reserves at the end of 1971 was in Alberta. Proven remaining marketable natural gas reserves rose by 3.9% to 55,461,850 MMcf in 1971, representing an improvement over the 2.7% increase attained in 1970. Net withdrawals of natural gas rose 9.1% to 6,847 MMcf/d in 1971 in response to increasing demand in both domestic and export markets.

Alberta. Although the number of well completions rose by 9% in 1971, the footage drilled showed only a slight increase. This resulted from a continuation of the recent trend to drill a larger number of wells in southern Alberta where potential producing reservoirs occur at relatively shallow depths. Much of this shallow drilling activity was related to the development of gas reserves in the Medicine Hat - Alderson area of eastern Alberta. However, during 1971, a medium-gravity oil discovery was made in the Grand Forks area of southern Alberta which promises to develop into one of the best fields found in Alberta in recent years. Exploratory

and development activity was spread throughout many areas of the province, and a significant new gas-bearing trend was outlined in the Dunvegan - Belloy area north of Grande Prairie in west-central Alberta.

Interest in Alberta's Athabasca tar sands is increasing because of a tightening world crude oil supply situation and the prospect of higher crude oil prices. Alberta's only recovery plant, which is operated by Great Canadian Oil Sands Limited at Fort McMurray, averaged 42,000 b/d during 1971. Syncrude Canada Ltd. received approval to raise the capacity of its proposed plant in the Fort McMurray area to 125,000 b/d of synthetic crude oil and 5,500 b/d of residual fuel oil. It is scheduled for completion in 1976. Experimental projects were also started to evaluate thermal methods for the in situ recovery of oil from the Athabasca tar sands and the extensive heavy oil deposits in the Cold Lake area of east-central Alberta.

A total of 1,990 wells were drilled, an increase of 166 over 1970. Development footage increased by 8% to 3,585,434 ft while exploratory footage declined 3% to 4,300,181 ft.

Saskatchewan. Drilling activity continued to decline in Saskatchewan as exploratory drilling decreased 3% to 1,053,283 ft and development drilling declined 32% to 954,226 ft. Nevertheless, interest in natural gas remained high as gas well completions rose substantially, mainly from development drilling in west-central and southwestern Saskatchewan, particularly around the Hatton field. Most of the oil development drilling continued to be in the heavy oil area around Lloydminster and in the medium-gravity oil fields of southwestern Saskatchewan.

British Columbia. Total footage drilled in British Columbia increased by 6% to 950,295 ft because of small increases in both exploratory and development drilling. A promising dual zone gas discovery was reported at the Home et al. Attachie 7-29 site located 25 miles northeast of Fort St. John. Other potential gas discoveries were reported along the Devonian Slave Point trend near the northern British Columbia boundary. Development drilling continued around existing oil fields in the Fort St. John area but no new producing trends were discovered.

Manitoba. Industry activity in the province continued to decline for lack of new discoveries. Total footage drilled dropped to 32,428 feet in 1971 from 54,726 feet in 1970. Oil well development drilling was confined to the margins of existing fields. There is no gas production in Manitoba.

Yukon Territory, Northwest Territories and Arctic Islands. The pace of exploratory effort in the territories and the Arctic Islands quickened during 1971 and was rewarded by several significant oil and gas discoveries. In the Mackenzie Delta area, Imperial Oil Limited's exploration program has so far yielded two oil finds on the Tuktoyaktuk Peninsula and two gas-condensate strikes on Richards Island in the Mackenzie Delta. Two of these discoveries were made in 1971. Early in 1972, Imperial Oil made another significant gas discovery on Richards Island, nine miles northeast of the gas discovery they had made in the previous year. Drilling in the area is being accelerated to more fully evaluate its reserve potential and will include the first experimental use of man-made islands for drilling platforms in the shallow delta waters.

In the Arctic Islands, Panarctic Oils Ltd. continued to dominate the exploration picture and was rewarded by another natural gas discovery at Kristoffer Bay on Ellef Ringnes Island. This is the third natural gas discovery made by Panarctic in the Arctic Islands since it began its exploratory program four years ago. The two previous discoveries, the first on Melville Island in 1969 and the second late in 1970 on King Christian Island, are considered to be major fields. Early in 1972, Panarctic made the first oil discovery in the Arctic Islands on the Fosheim Peninsula of Ellesmere Island. Although this find was not commercial, it does point up a potential for oil in the Sverdrup Basin. Total drilling, all exploratory, increased in 1971 to 76 wells (468,016 feet) from 70 wells (361,710 ft) in 1970.

Eastern Canada. The most significant discovery to date in the exploration of eastern Canadian off-shore areas was made in 1971 on Sable Island, approximately 190 miles east-southeast of Halifax, NS. The discovery tested substantial amounts of oil, gas and condensate from 17 different productive zones. Follow-up drilling to this discovery was scheduled for 1972 to determine if commercial production can be established. Since 1968, 30 exploratory wells have been drilled off the east coast of Nova Scotia, several of which had non-commercial indications of oil and gas.

Elsewhere in the eastern off-shore, the first exploratory well ever to be drilled on the Labrador Shelf had to be suspended before it reached total depth because of poor weather and rough sea conditions. This test was located about 510 miles north and slightly west of St. John's, Nfld.

In Ontario there were no significant discoveries made in 1971 and both exploratory and development drilling declined. Exploratory drilling, at 135,000 ft, was down 8% from the previous year and development footage, at 116,000 ft, declined 28%.

12.1.5 Coal

Canadian production for 1971 was 18,400,000 tons, an increase of 11.0% over the previous year (Table 12.27). Alberta's subbituminous production, representing 24.0% of the total, accounted for much of this increase by expanding 12.9% over 1970, largely to meet the greater needs of the electric utilities. Consumption of coal by electric utilities in 1971 increased 8.8% to 17,200,000 tons from 15,200,000 tons the previous year. Japanese demand for metallurgical coal was the outstanding reason for the increase of bituminous production by 25.2% and 33.1% in Alberta and British Columbia, respectively, so that bituminous coal ultimately represented 58.1% of total production despite a decrease of 7.4% in Nova Scotia. Saskatchewan's lignite production dropped 13.6% over the previous year, yet again representing 17.9% of total production.

Exports of coal for 1971 increased 76.1% over 1970 to 7,700,000 tons, of which 96% was shipped to Japan. Landed imports during the same period decreased 7.9% to 18,100,000 tons, of which approximately 95% entered through Ontario ports (Table 12.28). United States bituminous coal, of which 9,000,000 tons was used in thermal power generation and 7,000,000 tons in steel plants, accounted for 90% of these imports (Table 12.29).

Value of production (f.o.b. mines, and including value of reclaimed coal) increased 41.4% over 1970 to \$122,000,000 for 1971. For bituminous coal, unit value of production was \$9.92 per ton in British Columbia (an increase of \$2.54 per ton over 1970), \$9.85 per ton in Alberta (an increase of \$2.24 per ton), \$11.71 per ton in Nova Scotia (an increase of \$1.42 per ton) and \$7.61 per ton in New Brunswick (an increase of \$0.12 per ton). Alberta subbituminous averaged \$1.60 per ton (a decrease of \$0.03 per ton) while Saskatchewan lignite decreased \$0.01 per ton to \$1.93.

British Columbia. In 1971 production of low- and medium-volatile bituminous coals increased by more than one third to reach some 4,600,000 tons as production increased from the large mining complex of Kaiser Resources Ltd. in the Crowsnest Pass area of southeastern British Columbia. After experiencing difficulties with its large surface mine and preparation plant in 1970, Kaiser began a program of modifications in 1971 to overcome these problems. As a result Kaiser renegotiated interim adjustments in its long-term contract with Japanese buyers. Shipments were curtailed for three weeks in December 1971 as a result of a fire in Kaiser's coal dryer.

During 1971 Fording Coal Limited continued pre-production developments at its coal mine located along the Elk River, 35 miles north of the Kaiser mine. A 34-mile spurline from the CPR mainline was completed into the property in October. By late 1971 construction of its surface coal mine was almost completed. Initial deliveries under Fording's long-term contract with Japanese steel companies were scheduled to commence on April 1, 1972.

In 1971 a number of companies continued exploration programs for coal, particularly in northeastern British Columbia. In the southeastern part of the province, two properties were the object of feasibility studies.

Alberta. Alberta is Canada's leading coal-producing province, producing subbituminous and bituminous coals. Subbituminous output is used almost entirely for generation of electricity while the bituminous production is principally for the export market in Japan. In 1971 total production rose by approximately 18% to 8,000,000 tons as bituminous production increased by roughly one quarter.

Of the two new bituminous mines which commenced production of coking coal for export to Japan in 1970 only Cardinal River Coals, Ltd., situated in the Luscar area, operated at full capacity in 1971. McIntyre Porcupine Mines Limited, operating a large coal mining complex 80 miles northwest of Luscar in the Smoky River valley, experienced operating difficulties in 1971, particularly with their underground longwall system which was abandoned in mid-year

for a room-and-pillar system. Difficulties were also being experienced at McIntyre's preparation plant. By year-end a small surface mine had been developed to supplement underground production.

Subbituminous production continued to expand during 1971 because of the growing demand for coal for mine-mouth power generating stations in Alberta. Production rose by almost 13% in 1971. Substantial expansion is planned at the Highvale mine in the Wabamun area to service additional units at the Sundance generating station. In addition, two mines in the Forestburg area are increasing capacity to meet the planned expansion of the nearby Battle River generating station.

Exploration for both bituminous and subbituminous coals remained quite active in 1971. One company completed a feasibility study on a bituminous coking coal property near Luscar.

Saskatchewan. Production of lignite coals from the Estevan area of southeastern Saskatchewan declined by some 14% in 1971 from the record year of 3,800,000 tons in 1970. This decline happened mainly because the large purchases made by Ontario Hydro in 1970 to overcome shortages in that year were not repeated in 1971. Saskatchewan lignite is used primarily for the generation of electricity in Saskatchewan and to a lesser extent in Manitoba. The large Boundary Dam generating station at Estevan is the main consumer of lignite.

Yukon Territory. In 1971 small amounts of coal were produced at Carmacks for the lead-zinc operation of Anvil Mining Corporation Limited at Vangorda Creek.

New Brunswick. Coal production rose by roughly 30% to over 500,000 tons in 1971, primarily from increased demands in the province for thermal generation of electricity. The provincially-owned corporation, N B Coal Limited, which operates all coal mines in the province, continued its program of consolidation by closing the last underground mine in 1971. All coal production is now being extracted by surface methods. In recent years the only coal mining operations in New Brunswick have been conducted in the Minto coal field.

Nova Scotia. In 1971 coal production declined slightly to about 2,000,000 tons. The largest producer, Cape Breton Development Corporation (DEVCO), closed one mine in 1971 and continued development of its new mine at Langan scheduled for opening in 1974. Besides DEVCO, one mine closed at Springhill and another was scheduled to close at Thorburn early in 1972. Chief markets for Nova Scotia coal are thermal power generation and coke making.

Future outlook. Major export market possibilities exist, in addition to the already substantial demand from Japan, for Canadian metallurgical coal. The ability of the western Canadian coal mining industry to meet production schedules and quality standards and successful development of inexpensive methods for transporting coal from mines to consumers are critical to the rate of future export growth. Canadian coal production can reasonably be expected to double by 1980 to meet an increasing demand within the country and for export.

12.2 Government aid to the mineral industry

12.2.1 Federal government aid

Federal assistance to the mining industry takes the form of the provision of detailed geological, geophysical, topographical, geodetic, geographical and marine data which are of basic importance to the discovery and development of the mineral resources of Canada; the provision, through laboratory and pilot-plant research, of technical information concerning the processing of ores, industrial minerals and fuels on a commercial scale; certain tax incentives; and financial and technical assistance to the gold-mining industry under the Emergency Gold Mining Assistance Act.

The Department of Energy, Mines and Resources. The federal Department of Energy, Mines and Resources was created by the Government Organization Act on October 1, 1966 (RSC 1970, c.E-6). Apart from its administrative establishments, the Department is made up of three Sectors - Science and Technology, Mineral Development and Energy Development - each headed by an Assistant Deputy Minister and each aiding the Canadian mineral industry according to its assigned responsibility.

The Science and Technology Sector contains the Mines Branch, the Geological Survey of Canada, the Surveys and Mapping Branch, the Earth Physics Branch, the Atlantic Geosciences Centre, the Polar Continental Shelf Project and the Canada Centre for Remote Sensing.

The Mines Branch is a large laboratory and pilot-plant complex carrying out applied and

basic research to discover new and better methods of ensuring mine safety, extracting and refining ores and other minerals, and using metals and minerals in industry and defence. Gratifying results are being achieved in the extraction of metals from ores and in the refining of low-grade crude oil, in the automation of grinding circuits and cyanide leaching processes in gold mills and in the leaching of ground or crushed uranium ores by bacteria. An example of work that has resulted in direct economic benefit has been the development of a process to produce metallurgical coke from western Canadian coal, making it possible to undertake a long-term contract to export coke to Japan. In pyrometallurgy – the extraction of metals by heat – applied research is concentrated principally on the combination of shaft and electric furnaces for smelting iron ore. In petroleum refining, research concerns hydrogenation, catalytic cracking and catalyst development. This work is highly significant because of the opening up of unconventional sources such as the Athabasca tar sands and the so-called Colorado oil shales, whose economic importance has been recognized by the Mines Branch for many years. A close tie-in with producers is maintained in mineral processing in which the emphasis is on the concentration of metallic ores and on the processing and improvement of industrial minerals. In the field of mineral sciences, the physical, chemical, crystallographic and magnetic studies being undertaken on sulphide minerals are of fundamental interest. In physical metallurgy, experiments on new alloy combinations continue to yield valuable practical benefits for Canadian industry.

The Mines Branch is assisted in its work by the National Advisory Committee on Mining and Metallurgical Research, comprising senior executives and researchers from industry, government and universities.

The Geological Survey of Canada maps and studies the geology of Canada. It is the major organization engaged in this work in Canada and its studies extend to all provinces and territories. Its activities are designed to support two programs of the federal Department of Energy, Mines and Resources, the Mineral and Energy Resource Program and the Earth Science Program. A principal aim of the former is to ascertain the mineral and energy resource potential available to Canada and thus the Survey expends considerable effort in such fields as estimating the potential abundance and probable distribution of mineral and fuel resources. This is done by providing the necessary systematic geological framework, by defining those settings favourable to the occurrence of the various types of mineral commodities and fuels and by comparing these by appraising foreign mineral and fuel resources and by other studies. The Earth Science Program includes activities designed to assist in effective use and conservation of resources and in the management and preservation of man's environment throughout Canada. To assist in this, the Geological Survey provides geologically based information on land resources and terrain performance which is derived from geological, geomorphic, geophysical, geotechnical and related studies of earth and rock materials, land forms and associated dynamic processes.

In support of these activities, the Survey each year sends about 100 parties into various parts of Canada. The results of its studies are published in memoirs, bulletins, papers, maps and numerous scientific technical journals. Headquarters is in Ottawa but there are several regional offices of which the Institute of Sedimentary and Petroleum Geology in Calgary and the Atlantic Geosciences Centre at Dartmouth are the largest.

The Atlantic Geosciences Centre is located in the Bedford Institute at Dartmouth, NS. Its geologists and geophysicists study and investigate the deep structure of the continental shelves and the floors of the open ocean. The importance of this work can be seen in the light of the rapidly increasing interest in the potential mineral resources of continental shelves and of the world ocean. EMR scientists also study material from off-shore wells drilled by industry. Information gained from wells, when integrated with that from marine geological and geophysical surveys, provides the geological framework from which (a) the oil and gas potential may be estimated and (b) geological conditions evaluated to permit the regulation and supervision necessary to attain orderly and safe exploration of off-shore fuel resources. Because of the surge in exploration for petroleum in eastern Canada's sedimentary basins and the Gulf of St. Lawrence, EMR's geological and geophysical research is of great interest and value to the petroleum industry.

The Earth Physics Branch carries out much geophysical work of interest to the mineral industry. It studies, collects and publishes, in the form of maps and charts, information on the geomagnetic field in Canada. Most of the information published is obtained from airborne

geomagnetic surveys, which have ranged over the whole of Canada and across the Atlantic to Scandinavia. In addition, the Branch maintains a network of ten permanent geomagnetic observatories, as well as temporary observatories in summer at many widely distributed sites. It also operates a network of 23 seismic stations to assist in the study of the earth's interior and to obtain data for its quantitative assessment of seismic risk throughout Canada. In gravity research, another means of studying the composition of the earth's crust, the Branch is systematically mapping variations in the earth's gravity on a regional basis throughout Canada, including the Arctic and the floors of the Gulf of St. Lawrence and Hudson Bay. The results of all gravity measurements to the end of 1966 are available in a new gravity map of Canada on a scale of 1:5,000,000 or about 80 miles to the inch, for easy comparison with the new geological and tectonic maps of Canada on a similar scale.

No mineral development is possible without accurate, large-scale topographical maps. The Surveys and Mapping Branch, in conjunction with the Mapping and Charting Establishment of the Department of National Defence, has completed the topographical mapping of the country at the medium scale of 1:250,000, or about four miles to the inch. About 40% of the larger-scale mapping at 1:50,000 has been completed in the more settled areas and areas of greater economic importance.

The Mineral Development Sector is composed of the Mineral Resources Branch and the Explosives Division. The Explosives Division is responsible for the administration of the federal Explosives Act which is primarily an Act of public safety to control the manufacture, authorization, storage, sale, importation and transportation by road of explosives.

The Mineral Resources Branch is responsible for resource-economic research, program development and policy formulation in the field of non-renewable resources. It conducts fundamental and applied resource-engineering-economic research and field investigations into non-renewable resource problems, policies and programs on a commodity or total industry basis, in a regional, national and international context. The work covers all aspects of the mineral industry from resources through exploration, development, production, processing, transportation and consumption. On the basis of this work, the Branch publishes resource-engineering-economic reports and advises government departments and agencies on non-renewable resource policy matters. Current activities include regional studies of the mineral economy of a number of areas in Canada; assessment of mineral projects in various parts of Canada for which federal support has been requested; mineral resource and mineral reserve studies in a number of mineral commodities, including the mineral fuels, uranium and coal; and the safeguarding of Canadian mineral interests through participation in international agencies such as the United Nations Lead-Zinc Study Group, the Economic Commission for Europe, the Committee on Natural Resources on the Economic and Social Council, and the International Tin Council. The Branch administers the Emergency Gold Mining Assistance Act as a means of aiding mining communities largely dependent upon the gold mines. In collaboration with the Canadian International Development Agency and with the support of industry, the Branch is setting up training courses for mineral scientists, technologists and economists brought to Canada under the various aid programs, and is advising on mineral projects undertaken by Canada as an aid to developing countries. The Branch publishes an extensive series of reports and other material, and maintains the Mineral Occurrence Index, which is a listing of about 14,000 mineral showings and deposits in Canada that may be consulted by anyone interested.

The Energy Development Sector is discussed in more detail in Chapter 13, Section 13.1.1, but because of the wide range of interests of this primarily policy-making group and the direct impact of some of its activities on the mining industry, some specific areas of assistance are considered here. The Sector studies and assesses individual projects and developments relative to each of the energy sources and in terms of interrelationships with other energy sources. It appraises trends in oil and gas exploration and production, transportation, processing and marketing in Canada and on an international scale, and provides information to federal government agencies, industry and the general public on oil and gas developments in Canada and abroad. In the field of uranium, the Sector continues to co-ordinate uranium matters on such subjects as stockpile programs, possibilities of the establishment of uranium-enrichment facilities in Canada and export opportunities. With respect to coal, in addition to its wider role it provides assistance in the form of research and development grants to help improve the quality and utilization of coal, and provides advice on production expansion rates compatible

with profitability and projected demand in Canadian and foreign markets. The Sector also administers and manages the federal interests in mineral resources off-shore from Canada's east and west coasts and in the Hudson Bay region, as well as federally owned mineral rights in the provinces that become available for disposition.

Tax incentives to the mineral industry. Although mineral industry enterprises are subject to federal income tax, there are certain benefits granted to such enterprises under the Income Tax Act which serve as incentives to exploration and development of minerals, and to further processing of minerals. Certain modifications were made in the tax incentives to the mineral industry in the amended Income Tax Act which became effective on January 1, 1972.

Under the provisions of the amended Act, the exemption from income tax for the first three years of operation of new mining ventures will terminate at the end of 1973. However, initial capital expenditures in a new mining operation on buildings, machinery and equipment, and certain community and transportation facilities may be deducted as rapidly as income will permit. Consequently, new mining ventures will not be liable for federal income tax until these initial capital expenditures have been recovered. In the case of a major expansion of an existing mine, capital expenditures on buildings and on machinery and equipment also may be deducted immediately.

The operators of oil or gas wells or mines have been able to claim, during the full life of the operation, an automatic depletion allowance equal to one third of the taxable income. In general, the effect of the automatic percentage depletion allowance is to reduce the tax otherwise payable by one third. The automatic percentage depletion allowance will continue to apply until the end of 1976. Beginning in 1977, the automatic percentage depletion allowance will be replaced by an earned depletion allowance. The rate at which the earned depletion allowance may be deducted annually will remain at one third of the taxable income. However, the total amount of the allowance which may be deducted will be limited to the base or pool which is earned through eligible expenditures. The depletion base will amount to \$1 for every \$3 of expenditures on exploration and development activities, on certain assets acquired for a new mine or major expansion, and on facilities acquired to process, up to the prime metal stage, ores which were previously exported from Canadian mineral resources. Depletion may be earned on eligible expenditures between November 7, 1969 and the end of 1976 and accumulated for deduction after 1976.

Mining and petroleum companies will continue to have the right to claim costs of exploration and development incurred in the search for oil, gas or minerals in Canada as an immediate deduction from income from all sources. The cost of mineral properties will be classified as exploration expenses and immediately deductible. The cost of mineral properties will not earn depletion. Revenue from the sale of mineral properties will be treated as income.

Prospectors and their financial backers are no longer exempt from income tax on receipts from the sale of a mining property, but receipts in the form of shares will be classified as a capital gain upon sale of the shares. Only one half of a capital gain is subject to income tax. The tax liability of the prospector upon the sale of the shares may be further reduced through purchase of a forward-averaging annuity contract. Prospectors may deduct exploration costs, at the rate of 20% annually, from other income.

The general corporate tax rate which was 50% in 1972 will be reduced by one percentage point each year until it reaches 46% in 1976. The federal government abates to the provinces ten points of the corporate tax rate. Beginning in 1977, the abatement to the provinces in the case of mining companies will be increased by 15 percentage points, reducing the federal corporate tax rate on mining companies to 21%. At that time, the provinces will be in a position to occupy 25 percentage points of the corporate income tax rate on mines.

In the budget of May 8, 1972, the Minister of Finance proposed a reduction in the general corporate tax rate for manufacturing and processing to 40%, together with a two-year write-off on machinery, equipment and buildings. These benefits would apply to the processing of minerals only beyond the prime metal stage. It was also proposed that custom processors of minerals not owning a mineral resource would be eligible for the automatic depletion allowance as from January 1, 1973 and would be eligible to earn depletion for deduction after 1976 through expenditures on processing machinery and equipment acquired after 1972. The budget proposals were not enacted during the last session of Parliament, but the government indicated an intention to introduce enabling legislation in 1973.

Emergency Gold Mining Assistance Act. Under this Act, which came into force in 1948 (RSC 1970, c.E-5), financial assistance is provided to marginal gold mines to counteract the effects of increasing costs of production and a fixed price for gold. By enabling gold mines to extend their productive life, the subventions help communities dependent on gold mining to adjust gradually to diminishing support. In 1971, the Act was amended and its application extended to June 30, 1973 (RSC 1970, c.7, 2nd Supp.).

An Interdepartmental Committee on Gold Mining, in a Memorandum to Cabinet in April 1972, recommended that the EGMA Act be extended for a further three years from June 30, 1973 to June 30, 1976 without any change in the present method of computing the amount of assistance payable. This was confirmed by the Cabinet on May 23, 1972 and the Minister of Energy, Mines and Resources announced that a Bill would be introduced in Parliament to amend the EGMA Act accordingly.

The amount of assistance payable to an operator is determined by a formula, and is based on the average cost of production per ounce and the number of ounces produced; it ranges from zero to \$10.27 per oz.t. produced. Gold mines having a cost of production of \$26.50 or less per oz.t. receive no assistance and those having a cost of production of \$45 or more per oz.t. receive the maximum rate of \$10.27 per oz.t.

Under the current formula, the assistance payable to the operator of a gold mine is computed by adding 25% to the product of two factors — the “rate of assistance” and the number of “assistance ounces”. The number of assistance ounces is two thirds of the total ounces produced and sold to the Royal Canadian Mint by a mine in a calendar year. The rate-of-assistance factor is two thirds of the amount by which the average cost of production exceeds \$26.50. The rate-of-assistance factor is limited to a maximum of \$12.33 which is reached when the average cost of production rises to \$45 per oz.t. of gold produced. The average cost of production is determined by dividing the total allowable costs by the total number of ounces produced in the form of bullion from the mine in a calendar year. Only those ounces of gold that have been sold to the Royal Canadian Mint are eligible for inclusion in the assistance-ounces factor. The cost of production includes mining, milling, smelting, refining, transportation and administration costs. Allowances are made for depreciation, pre-production costs and expenditures on exploration and development on the mine property in accordance with the Regulations.

The amounts paid to operators of gold mines to March 31, 1972 for the years 1948-71 inclusive, totalled \$301,270,630 on a production of 61,738,601 oz.t. of gold produced and sold in accordance with requirements of the Act. The assistance payable for gold produced and sold under the Act in the calendar year 1971 was estimated to be \$11.8 million. The average Mint price for gold in Canadian funds was \$37.69 in 1969, \$36.56 in 1970 and only \$35.34 in 1971.

In March 1968, the governors of the central banks of seven nations introduced a two-price system for gold which separated transactions in gold among the central banks from private open-market operations. The governors agreed that the existing official reserves would be used only in transfers among monetary authorities at the established price of US\$35 per oz.t., and that the central banks would neither purchase nor sell gold in private gold markets. The Minister of Finance stated that Canada would support fully the agreements reached by the central bankers. He also stated that there would be no change in the practices applicable to gold producers under the Emergency Gold Mining Assistance Act.

Operators of gold mines were thus offered the alternatives of selling their production to the Royal Canadian Mint at the fixed price of \$35 per oz.t. in United States funds in order to qualify for assistance payments under the Emergency Gold Mining Assistance Act or of selling on the open market at the price determined by supply and demand. It may be noted that the amount of assistance payable is determined on the basis of the cost of production and is not related to the selling price of the gold.

In accordance with the agreement by the central bankers, gold purchased by the Mint is not added to Canada's official reserves, but is sold on the open market. Except for a short period early in 1970, the open market gold price exceeded US\$35 from April 1968 to the end of 1971. Since only gold mine operators receiving cost assistance sold their gold to the Mint, the cost of assistance under the Act was effectively reduced by the difference in price at which the Mint bought newly mined gold and the price for which it was sold to open market bidders during this period.

On May 27, 1968, the price per fine troy ounce of gold paid by the Mint was set at US\$35 by the Gold Bullion Regulations (Order in Council PC 1968-1017). This price prevailed until Order in Council PC 1972-560, dated March 23, 1972, authorized the Royal Canadian Mint to raise the Mint price to US\$38 on such date as the Minister of Finance might specify. On May 8, 1972 the United States gold price was officially raised to \$38 per oz.t. Effective the same date, the Minister of Finance authorized the Royal Canadian Mint to raise the Mint paying price to US\$38 per oz.t.

During 1971 the gold price continued to rise in international open markets and was close to US\$44 by the end of the year. Several lode gold mines decided to forego any cost assistance under the EGMA Act and commenced selling their gold on the open market during 1971. The price of gold on open markets continued to advance during 1972 and Canadian lode gold mines are now selling all their gold production on the open market and are receiving no cost assistance under the EGMA Act.

12.2.2 Provincial government aid

Newfoundland. The Newfoundland government, through the Mines Branch of the Department of Mines and Energy, provides several valuable services to those interested or involved in exploration and mining, including: a continuing program of mineral assessment designed to encourage development of the mineral resources of the province; inspection of exploration work carried out on concession areas and examination of mining operations; administration of beaches (control of removal of sand and gravel as a conservation measure) and collection of data relevant to the control of sand removal; identification of mineral rock specimens submitted by the public and examination of corresponding occurrences where warranted; technical advice dispensed to those who seek such service (i.e., in hydrological problems and on the availability of quarriable peat moss to be removed by permit); co-operation with the Geological Survey of Canada and other federal government agencies; and preparation and publication of data useful for educational and general informational purposes, including the preparation of mineral and rock sample sets. Geological reports, geophysical maps and compilations of general data pertaining to specific areas are procurable at nominal cost and other information from unclassified files is made available to interested parties. Prospectors' or miners' permits are issued by the Mines Branch and mining claims are recorded.

Nova Scotia. Under the provisions of the Mines Act (RSNS 1967, c.185), the government of Nova Scotia may assist a mining company or operator in the sinking of shafts, slopes, deeps and winzes and the driving of adits, tunnels, crosscuts, raises and levels. This assistance may take the form of work performed under contract, the payment of bills for materials and labour, or the guarantee of bank loans. Any such work must be approved by the Department of Mines. Mining machinery and equipment to be used in searching for or testing and mining of minerals may be made available through the government. Such equipment is under the direct supervision of the Chief Mining Engineer.

The government of Nova Scotia is also empowered to make any regulations considered necessary for increasing the output of coal. Such regulations cover appropriation, on payment, of unworked coal lands, operation of coal mines, and loans or guarantees for loans. Close co-operation is maintained with the federal government in carrying out federal regulations made to secure increased production and economical distribution of coal from the mines of the province.

New Brunswick. The Mineral Development Branch administers the disposition of Crown mineral rights including the issuing of prospecting licences, recording of mining claims, issuing of mining licences and leases and other matters pertaining thereto. Detailed and index claim maps are prepared for distribution. The Branch is responsible for general and detailed geological mapping and investigations. Maps and reports are prepared for distribution, mineral and rock specimens are examined for prospectors and preliminary examinations of mineral prospects are made when requested and circumstances warrant. The Branch administers the safety regulations governing operations under the Mining Act. All mines are regularly inspected, laboratory facilities are maintained and certain equipment used in mines must be approved. The Branch is responsible also for the collection of mining taxes and royalties and the preparation of statistics on mineral production. A regional office, located at

Bathurst and staffed by geologists and inspectors, serves as a recording office for northeastern New Brunswick, and another at St. George, staffed by a senior geologist, conducts regional work and assists exploration companies and prospectors working in the southwestern area. Claim maps and topographical, geological and aeromagnetic maps are available for perusal and distribution.

Quebec. Through its Director General of Mines, the Department of Natural Resources is responsible for implementing the Mining Act (SQ 1965, c.34) and the Mining Duties Act (SQ 1965, c.35). The directorate includes the following three branches: Geology, Mines, and Mining Economics and Development. The Geology Branch consists of six services: geological exploration; mineral deposits; geotechnology; technical documentation; mapping; and technical revision. The Branch is responsible for the geological study of the province with the aim of promoting development of its mineral resources. As a result of field trips undertaken each year, the Branch is in a position to supply detailed reports on various areas, together with geoscientific maps. The new geotechnical service is concerned with solving problems connected with development of a particular environment through application of its geological knowledge of the area.

The Mines Branch includes the Mine Titles Service, Inspection and Engineering Service and the Mining Conflicts Division. The Branch controls awards of mining rights on Crown lands. Its work covers registration of mining claims and issuing of development permits or special permits governing the sale or rental of lands for mining purposes. Further, it sees to it that holders of mining rights carry out whatever development work is specified in the titles they hold. Mine inspectors ensure that work done in mines, quarries and treatment plants is carried out in conformity with the safety measures prescribed by law or regulation. The Mines Branch is also responsible for preparing and carrying out whatever engineering works are required to open up new mining areas or operations, including the building of access roads, construction of mining townsites and for any regulations pertaining to the use of the land in question. The Mining Conflicts Division is responsible for verifying the existence or validity of claims in accordance with Part VI of the Mining Act.

The Mining Economics and Development Branch is concerned with the optimum use of Quebec's mineral resources through development and conservation. Three services are now being organized: Plans, Economic Evaluation and Publicity. The Branch aims to identify and make plans for projects that lend themselves to quick and concrete results in the development of Quebec's mineral resources. It will carry out, or have carried out, studies on marketing, financing, transportation, development and operational techniques, profitability and other essential aspects of various undertakings.

To provide for future development of the mining industry, scholarships are granted to students wishing to become engineers in the fields of geology, mining and metallurgy. Scholarships are also awarded to students in hydrology or related sciences (hydro-electricity, hydraulics, and meteorology). The Department of Natural Resources, in co-operation with the universities, gives annual courses for prospectors. Finally, the Department makes a conscious effort to initiate students at the secondary and CEGEP levels by seconding staff members to camps for young scientists to interest them in the mineralogy and geology fields.

Ontario. The objective of the Mines Division of the Ontario Ministry of Natural Resources is to provide an optimum continuous contribution to the economy of Ontario by stimulating and regulating the utilization of available supplies of minerals by resource products industries. The Mines Division is composed of four Branches in Head Office: the Mineral Resources Branch, the Geological Branch, the Mines Engineering Branch and the Mineral Research Branch.

The objective of the Mineral Resources Branch is to ensure the orderly development and utilization of provincial non-renewable resources. It is essentially a strategic planning group composed of four sections: Industrial Minerals (including the administration of the Pits and Quarries Control Act), Metallic Minerals, Petroleum Resources and Commodity Analysis.

The Geological Branch's objectives are to encourage an optimum level of exploration activity and rate of mineral discovery through geological, geophysical and geochemical surveys of the province, the publication of maps and reports on mineral occurrences in Ontario and the education of prospectors and others in mineral exploration. Assessment work files are administered by this Branch. It is also responsible for the administration of the Mineral Exploration Assistance Program, a program designed to stimulate exploration in the Red

Lake, Geraldton - Beardmore, Kirkland Lake and Cobalt areas. One third of the cost of exploration to a maximum of \$33,000 is provided to junior- and medium-sized companies to explore in these areas.

The Mineral Research Branch is composed of the Assay Laboratory in Toronto and the Temiskaming Testing Laboratory in Cobalt. The Assay Laboratory provides assay and analytical services and conducts mineralogical investigations to aid in the discovery and development of mineral deposits. Its services are available to the mining industry and public at large. The Temiskaming Testing Laboratory situated at Cobalt operates a bulk sampling and assay laboratory to assist the producers of the area in marketing their silver-cobalt ores.

The Mines Engineering Branch administers Part IX of The Mining Act which calls for regular examination of all operating mines, quarries, sand and gravel pits and certain metallurgical works with a view to ensuring the health and safety of employees as well as the public. Regional geologists and mines engineers provide advice or support to the line organization of the Ministry. The Lands Administration and Surveys and Mapping branches of the Lands Division handle matters dealing with the recording of mining claims, assessment work, etc. and the preparation of title to mining lands.

Manitoba. The Mines Branch of the Manitoba Department of Mines, Resources and Environmental Management offers the following services: recording the staking and acquisition of Crown mineral rights and other relative material associated with minerals, compiling assessment information and inspecting mineral rights dispositions; compiling geological data pertinent to mineral occurrences, issuing reports and maps covering geological and geochemical surveys, operating an analytical and assay laboratory to assist prospectors and geologists in the evaluation of mineral occurrences and the classification of rocks and minerals; giving engineering approval of mining works and inspecting mining operations regarding the health and safety of employees, controlling in-plant environmental and safety regulations related to mining and quarrying operations, training mine rescue crews and inspecting mine rescue facilities; inspecting oil well drilling sites, abandonment and reworking and maintaining records of each operation.

The Mineral Exploration Assistance Act (1966) provides for limited financial grants to prospectors who have carried out previously approved exploration programs at specified locations; such grants are repayable if the program leads to a profitable mining operation.

Saskatchewan. The Mineral Lands Branch of the Department of Mineral Resources is responsible for the disposition of all Crown minerals and maintains records respecting areas let out by lease, permit, drilling reservation, claim or claim block. Recording offices, located at Regina, La Ronge, Uranium City and Creighton, assist the public in determining the lands available and accept applications.

Officers of the Mines Inspection Branch, under the authority of The Mines Regulation Act, make regular examinations of all mines to ensure proper conditions for the health and safety of the men employed. Safety education, particularly in the form of first aid and mine rescue instruction, is also a part of the work of this Branch. All Branch officers are stationed at the Regina headquarters.

The Precambrian Geology Division of the Geological Sciences Branch conducts geological surveys in the Shield areas of the province and publishes maps and reports for the information and guidance of the industry. Resident geologists are stationed at Uranium City and La Ronge and at the latter centre a laboratory provides for storage and examination of core and samples. The Division processes exploration data and assessment work to be made available for inspection by the industry.

Alberta. The Energy Resources Conservation Act, proclaimed January 1, 1972, provided for the transfer to the Energy Resources Conservation Board of responsibility for the administration of The Pipe Line Act, The Coal Mines Regulation Act and The Quarries Regulation Act. This transfer brings under one administrative authority all aspects of the energy resources of Alberta including their conservation, regulation and transmission. The Board regulates coal mines and quarries and maintains standards of safety by inspection and certification of workers. The oil and gas industries are served in a similar way but regulatory measures are also concerned with preventing the waste of oil and gas resources and with giving each owner of oil and gas rights the opportunity of obtaining a fair share of production. The Board compiles periodic reports and annual records which are of invaluable assistance in oil

development in Alberta. The Workmen's Compensation Board also maintains safety standards and pays the cost of training mine rescue crews. The mining industry is also served by the Research Council of Alberta which has made geological surveys of most of the province and has carried out projects concerned with the uses and development of minerals. The Council has studied the occurrence, uses and analyses of Alberta coals and their particular chemical and physical properties, the use of coals in the generation of power, and the upgrading and cleaning of coal; and has also studied briquetting, blending, abrasion loss, shatter and crushing strength, asphalt binders and dust-proofing of coal. Studies have been made of glass sands, salt, fertilizers, cement manufacture and brick and tile manufacture.

The province from time to time has had commissions examine various aspects of the mining industry when it has considered that their findings would be of assistance in developing such industries. The province, together with the Canadian Association of Oil Well Drilling Contractors and the Canadian Petroleum Association, maintains a detailed supervisory and safety training program concerned with the drilling of oil and gas wells. Of assistance also to mining companies and oil companies are the special reductions provided for in the Alberta Income Tax Act. These follow the parallel provisions in the federal Income Tax Act.

British Columbia. The Department of Mines and Petroleum Resources of British Columbia provides the following services: detailed geological mapping as a supplement to the work of the Geological Survey of Canada; assistance to the prospector in the field by departmental engineers and geologists; grub-stakes, limited to a maximum of \$800, for prospectors; assistance in the construction of mining roads and trails; and inspection of mines to ensure safe operating conditions.

12.3 Mining and petroleum legislation

12.3.1 Federal and departmental jurisdictions

Mineral rights vested in the Crown in right of Canada include those situated in the Yukon and Northwest Territories and off-shore underlying Canada's continental margins, as well as those underlying certain federally owned lands within the provinces.

The Supreme Court of Canada in its Opinion of November 1967 stated that, as between Canada and the province of British Columbia, Canada has proprietary rights in and legislative jurisdiction over "lands, including the mineral and other natural resources, of the sea bed and subsoil seaward from the ordinary low-water mark on the coast of the mainland and the several islands of British Columbia, outside the harbours, bays, estuaries and other similar inland waters, to the outer limit of the territorial sea of Canada, as defined in the Territorial Sea and Fishing Zones Act...". The Court also stated that the federal government has legislative jurisdiction "in respect of the mineral and other natural resources of the sea bed and subsoil beyond that part of the territorial sea of Canada... to a depth of 200 metres or, beyond that limit, to where the depth of the superjacent waters admits of the exploitation of the mineral and other natural resources of the said areas...".

The Department of Energy, Mines and Resources, through the Resource Management and Conservation Branch, is responsible for administration and enforcement of legislation and regulations relating to mineral resources off-shore from Canada's east and west coasts and in the Hudson Bay and Hudson Strait regions, as well as with respect to federally owned mineral rights in the provinces mentioned above. The Department of Indian Affairs and Northern Development, through the Northern Economic Development Branch, is similarly responsible for mineral rights in the Yukon and Northwest Territories and underlying Canada's high-Arctic off-shore regions.

Mineral rights of Indian reserves in the provinces are also vested in the Crown in the right of Canada and are administered by the Indian-Eskimo Economic Development Branch of the Department of Indian Affairs and Northern Development. The rights to a reserve may be taken up only after the Indian band has given approval for development through a referendum vote. The minerals are then administered under the Indian Oil and Gas Regulations or the Indian Mining Regulations, except in British Columbia where mining rights must be acquired under provincial statutes and the BC Indian Reserves Mineral Resources Agreement of 1943. The Indian Oil and Gas Regulations provide for disposal of rights by public tender in the form of permit or lease parcels. The Indian Mining Regulations, on the other hand, provide for disposal based on terms negotiated with the Indian band council. The Indian councils are thus

assuming a greater share of responsibility in the management of their mineral resources. Officers of the Department of Indian Affairs and Northern Development are advisers to the Indian councils on mineral matters and are responsible for the administration and enforcement of relevant regulations.

12.3.2 Federal mining laws and regulations

Mining exploration is carried out in the Yukon Territory in accordance with the provisions of the Yukon Quartz Mining Act and the Yukon Placer Mining Act; in the Northwest Territories, including Arctic coastal waters, operations are governed by the Canada Mining Regulations 1961, as amended. There are also the Territorial Dredging Regulations, Territorial Coal Regulations and Territorial Quarrying Regulations common to both territories. In the Yukon Territory, mining rights may be acquired by staking claims under the appropriate Acts and Regulations. A one-year lease may be obtained to prospect for the purposes of placer mining, renewable for two additional periods of one year each; a 21-year lease, renewable for a like period, may be obtained under the Yukon Quartz Mining Act.

Under the Canada Mining Regulations, a prospector's licence is required. Staked claims must be converted to lease or relinquished within ten years. In certain areas, a system of exploration by permit over large areas is allowed. Any individual over 18 years of age or any joint-stock company incorporated or licensed to do business in Canada may hold a prospector's licence. No lease will be granted to an individual unless the Minister of the Department involved is satisfied that the applicant is a Canadian citizen and will be the beneficial owner of any interest acquired under such lease; no lease will be granted to a corporation unless such corporation is incorporated in Canada and unless the Minister is satisfied that at least 50% of the issued shares of the corporation are owned by Canadian citizens or that the shares of the corporation are listed on a recognized Canadian stock exchange and that Canadians will have the opportunity of participating in the financing and ownership of the corporation. Any new mine beginning production after the Canada Mining Regulations came into force in 1961 will not be required to pay royalties for 36 months, starting from the day the mine comes into production. Production date is established as the date determined under the provisions of the Income Tax Act.

An exploration assistance fund for petroleum and other minerals in the Yukon and Northwest Territories was established by the federal government in 1966. Initially limited to \$3,000,000 a year, the fund may provide 40% of the cost of approved exploration programs. Assistance is available only to Canadian citizens or companies incorporated in Canada. Named the Northern Mineral Exploration Program, it is designed to encourage investment from additional Canadian sources previously not attracted to investment in northern exploration operations.

12.3.3 Oil and gas legislation

Oil and gas exploration and development in the Yukon and Northwest Territories and Canadian off-shore areas are governed by the Territorial Lands Act, the Public Lands Grants Act, the Oil and Gas Production and Conservation Act and regulations pursuant thereto. Both the Canada Oil and Gas Land Regulations and the Oil and Gas Drilling and Production Regulations were under review during 1972. The former regulations are being amended; the latter regulations may be amended with respect to "onland" areas, but new operational and conservation regulations are being drafted for the off-shore areas pursuant to the Oil and Gas Production and Conservation Act.

An oil and gas exploration permit may be granted either upon application or, in respect of land previously held under permit, by sale through public tender for three, four or six years, depending upon latitude and region. A permit is renewable for up to six one-year periods, with provisions that the appropriate Minister may grant additional renewals under special terms and conditions. The permittee is obligated to undertake exploratory work in an amount no less than five cents per acre for the first 18 to 36 months increasing to 15 to 20 cents per acre for subsequent periods of the primary term. Work obligations for each one-year renewal period increase up to 50 cents per acre. The permittee must post a guarantee deposit in the form of cash, bonds, or promissory notes prior to each work period. These deposits are returned upon receipt of satisfactory evidence that exploratory work has been performed, and are forfeited to the Crown in the event the permittee fails to fulfil the work obligations. Oil and gas leases may

be selected in accordance with prescribed guidelines for up to 50% of a permit area, with that portion not converted to lease reverting to the Crown.

An oil and gas exploration permit may be issued to any individual over 21 years of age or to any joint-stock company incorporated or licensed to do business in Canada, or incorporated in any province of Canada. Extraterritorial companies applying for permits in the Northwest Territories must be registered under the Companies Ordinance of the Northwest Territories. An oil and gas lease may be granted to a permittee where the Minister of the Department involved is satisfied that the applicant is a Canadian citizen over 21 years of age and will be the beneficial owner of the interest granted, or to a corporation where such corporation is incorporated in Canada, and where the Minister is satisfied that at least 50% of the issued shares of the corporation are beneficially owned by Canadian citizens or that the shares of the corporation are listed on a recognized Canadian stock exchange and that Canadians will have an opportunity of participating in the financing and ownership of the corporation, or the operation is wholly owned by a corporation that meets either of these two requirements.

The Oil and Gas Production and Conservation Act provides for comprehensive control over all oil and gas operations in the territories and off-shore regions including such matters as safety, the prevention of waste and pollution, production, conservation, storage, transmission, and unitization of oil and gas fields. An Oil and Gas Committee of five members appointed by the Governor in Council is empowered to hold inquiries, to hear appeals, and to make orders in connection therewith.

Federally owned mineral rights within the provinces that are available for development (except those in Indian lands) are administered by the Department of Energy, Mines and Resources under regulations promulgated pursuant to the Public Lands Grants Act.

12.3.4 Provincial mining laws and regulations

In general, all Crown mineral lands lying within the boundaries of the several provinces (with the exception of those within Indian reserves, national parks and other lands which are under the jurisdiction of the federal government) are administered by the respective provincial governments. The exception is Quebec where all mineral lands except those granted to individuals in the townships prior to 1880 are administered by the province; also, mining rights on federal lands in Quebec are administered by the province.

The granting of land in any province except Ontario no longer automatically carries with it mining rights upon or under such land. In Ontario, mineral rights are expressly reserved if they are not to be included. In Nova Scotia, no mineral rights belong to the owner of the land except those pertaining to gypsum, agricultural limestone and building materials, and the Lieutenant-Governor in Council may declare deposits of either limestone or building materials to be minerals. Such declaration is to be based on economic value or to serve the public interest. In such case, the initial privilege of acquiring the declared minerals lies with the owner of the surface rights who must then conform with the requirements of the Mines Act. In Newfoundland, mineral and quarry rights are expressly reserved. Some early grants in British Columbia, Alberta, Saskatchewan, Manitoba, New Brunswick, Quebec and Newfoundland also included certain mineral rights. Otherwise, mining rights must be obtained separately by lease or grant from the provincial authority administering the mining laws and regulations. Mining activities may be classified as placer, general minerals (or veined minerals and bedded minerals), fuels (coal, petroleum and gas) and quarrying. Provincial mining regulations under these divisions are summarized in the following paragraphs.

In most provinces in which placer deposits occur there are regulations defining the size of placer holdings, the terms under which they may be acquired and held, and the royalties to be paid.

General minerals are sometimes described as quartz, lode, or minerals in place. With the exception of British Columbia, the most elaborate laws and regulations apply in this division. In all provinces except Alberta and Saskatchewan, a prospector's or miner's licence, valid for one year, must be obtained to search for mineral deposits, the licence being general in some areas but limited in others; a claim of promising ground of a specified size may then be staked. In Manitoba and British Columbia a licence is required only for staking and any number of dispositions may be staked under one licence. A claim must be recorded within a time limit and payment of recording fees made, except in Quebec where no fees are required. Work to a specified value per annum must be performed upon the claim for a period of up to ten years

except in Quebec where a development licence may be renewed on a yearly basis; also in Manitoba and Saskatchewan there is no work commitment in the first year of the claim. There is no time limit in British Columbia but \$500 assessment work, of which a survey may represent two fifths, must be performed and recorded before a lease may be obtained. In Quebec, a specified cost of work must be performed and any excess amount expended may be applied to subsequent renewals of the licence. The taxation applied most frequently is a percentage of net profits of producing mines or royalties. In Saskatchewan, subsurface mineral regulations covering non-metallics stipulate the size and type of dispositions that may be made in order to maintain the disposition in good standing, provide for fees, rentals and royalties, and set out generally the rights and obligations of the disposition holder.

In provinces where coal occurs, the size of holdings is laid down together with the conditions of work and rental under which they may be held. In Quebec, the search for petroleum and natural gas may be carried out under a prospecting or search permit followed by a working lease; the search permit covers a period of five years and an acreage of not over 60,000 acres, whereas the lease extends over a 20-year period and an acreage not over half the acreage of the permit. In Nova Scotia, mining rights to certain minerals, including petroleum, occurring under differing conditions may be held by different licensees. Provision is sometimes made for royalties. Acts or regulations govern methods of production. In the search for petroleum and natural gas, an exploration permit or reservation is usually required; however, in Manitoba, Saskatchewan, Alberta and British Columbia leases usually follow the exploration reservation whether or not any discovery of oil or gas is made. In Alberta, exploration costs are applicable in part on the first year's lease rental, in Manitoba they may be applied to the lease rental for a period of up to three years and, in British Columbia and Saskatchewan, credit is given for up to 24 months' rental, having regard to the amount of excess credit established. In other provinces, the discovery of oil or gas is usually prerequisite to obtaining a lease or grant of a limited area, subject to carrying out drilling obligations and paying a rental, a fee, or a royalty on production.

Quarrying regulations define the size of holdings and the terms of lease or grant. In Nova Scotia, sand deposits of a quality suitable for uses other than building purposes and limestone deposits of metallurgical grade belong to the Crown; gypsum quarries belong to the owner of the property. Under the New Brunswick Quarriable Substances Act, 1968, quarriable substances (ordinary stone, building and construction stone, sand, gravel, peat and peat moss) are vested in the owner of the land in or on which they lie; the Minister with the approval of the Lieutenant-Governor in Council may designate a shore area lying outside Crown land to be subject to the Act; and no person shall take or remove or cause to be taken or removed more than one half cubic yard of a quarriable substance from Crown land or a designated shore area without obtaining a permit or lease. On Quebec public lands and on those granted to individuals after January 1, 1966, the stone, sand and gravel, like other building materials, belong to the Crown; quarries located on land granted to individuals prior to 1966 remain in the possession of the owners of the surface; the right to exploit all building materials except sand and gravel may be acquired by ordinary staking-out and the right to work sand and gravel beds is set by regulation. In Saskatchewan, sand and gravel on the surface and all sand and gravel obtainable by stripping off the overburden or other surface operation belong to the owner of the surface of the land. In Alberta, sand, gravel, clay and marl recovered by excavating from the surface belong to the owner of the surface of the land. Copies of mining legislation including regulations and other details may be obtained from the provincial authorities concerned.

Sources

- 12.1 Minerals and Metals Division, Mineral Resources Branch, Department of Energy, Mines and Resources.
- 12.2.1 Public Relations and Information Services, Department of Energy, Mines and Resources; Resource Development Division and Minerals and Metals Division, Mineral Resources Branch, Department of Energy, Mines and Resources.
- 12.2.2 Supplied by the respective provincial government departments.
- 12.3 Resource Development Division, Mineral Resources Branch, Department of Energy, Mines and Resources. Provincial returns revised by the respective provincial governments.

Tables

.. not available
... not appropriate or not applicable
— nil or zero
-- too small to be expressed

e estimate
p preliminary
r revised
certain tables may not add due to rounding

12.1 Value of mineral production, 1886-1971

Year	Total value \$	Value per capita \$	Year	Total value \$	Value per capita \$	Year	Total value \$	Value per capita \$
1886	10,221,255	2.23	1930	279,873,578	27.42	1963 ^r	3,027,175,644	159.91
1890	16,763,353	3.51	1935	312,344,457	28.84	1964 ^r	3,365,206,817	174.45
1895	20,505,917	4.08	1940	529,825,035	46.55	1965 ^r	3,714,861,414	189.11
1900	64,420,877	12.15	1945	498,755,181	41.31	1966 ^r	3,980,545,512	198.88
1905	69,078,999	11.51	1950 ¹	1,045,450,073	76.24	1967 ^r	4,380,805,285	214.96
1910	106,823,623	15.29	1955	1,795,310,796	114.37	1968 ^r	4,722,248,677	227.64
1915	137,109,171	17.18	1960	2,492,509,981	139.48	1969 ^r	4,734,283,855	225.43
1920	227,859,665	26.63	1961 ^r	2,602,896,181	142.72	1970	5,722,058,591	268.68
1925	226,583,333	24.38	1962 ^r	2,881,272,479	155.05	1971	5,968,002,192	276.70

¹ Value of Newfoundland production included from 1950.

12.2 Value of mineral production, by class, 1962-71 (dollars)

Year	Metallics	Non-metallics	Fuels	Structural materials	Total
1962	1,496,433,950	217,453,009	811,218,687 ^r	356,166,833	2,881,272,479 ^r
1963	1,509,536,931	253,452,413	885,175,184 ^r	379,011,116	3,027,175,644 ^r
1964	1,701,648,538	287,497,000	973,002,955 ^r	403,058,324	3,365,206,817 ^r
1965	1,907,575,899	327,238,901	1,045,884,710 ^r	434,161,904	3,714,861,414 ^r
1966	1,984,672,572	363,387,717	1,151,835,601 ^r	480,649,622	3,980,545,512 ^r
1967	2,285,279,477	406,269,252	1,234,596,195 ^r	454,660,361	4,380,805,285 ^r
1968	2,492,599,647	446,922,191	1,343,163,414 ^r	439,563,425	4,722,248,677 ^r
1969	2,377,523,392 ^r	450,188,745	1,465,400,072 ^r	441,171,646 ^r	4,734,283,855 ^r
1970	3,073,344,135	480,537,626	1,717,730,749	450,446,081	5,722,058,591
1971	2,940,287,001	500,826,829	2,014,409,996	512,478,366	5,968,002,192

12.3 Quantity indexes of production of the principal mining industries, 1962-71 (1961=100)

Mining industry	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
Metal mines	102.2	104.1	120.2	122.8	121.1	129.3	135.9	122.1	155.3	156.3
Placer gold and gold quartz	95.1	91.4	90.1	87.4	82.2	73.6	66.8	59.5	64.3	60.3
Iron	139.3	170.4	208.6	224.8	241.5	260.7	314.8	268.3	368.4	360.4
Miscellaneous	97.5	95.7	111.4	112.7	108.6	117.9	119.2	109.6	137.0	140.3
Non-metal mines (except coal)	108.7	121.4	139.2	151.5	164.2	173.6	189.7	203.2	207.7	212.2
Asbestos	103.2	109.0	121.9	118.2	127.7	125.6	132.7	133.9	142.5	141.7
Mineral fuels	114.3	123.0	133.0	142.0	152.4	166.1	181.5	198.8	233.0	256.1
Coal	97.9	104.5	109.8	111.9	103.7	103.1	102.6	99.1	155.3	195.6
Crude petroleum and natural gas	117.3	126.3	137.2	147.4	161.2	177.5	195.7	216.8	247.0	267.0
Total, mines (incl. milling), quarries and oil wells	106.2	112.1	126.0	131.9	134.2	142.1	152.4	150.8	178.5	186.8

12.4 Quantity and value of mineral production, 1970 and 1971

Mineral	1970 Quantity	Value \$	1971 Quantity	Value \$
METALLICS	...	3,073,344,135	...	2,940,287,001
Antimony	lb.	726,474	323,525	243,614
Bismuth	"	590,340	3,370,554	1,398,035
Cadmium	"	4,307,953	15,336,313	7,883,782
Calcium	"	443,557	374,476	291,504
Cobalt	"	4,561,213	10,207,366	9,429,564
Columbium (Cb ₂ O ₅)	"	4,694,239	4,819,951	2,296,962
Copper	"	1,345,434,265	779,242,403	760,016,078
Gold	oz.t.	2,408,574	88,057,464	79,903,241
Indium	"	52,314,020	588,631,153	555,135,728
Iron ore	ton	778,369,611	31,591,232	30,824,497
Iron, remelt	lb.	20,707,110	123,138,074	109,487,724
Lead	"	7,140,807	14,467,305	5,163,921
Magnesium	"	33,771,716	57,140,574	38,367,344
Mercury	"	611,762,362	830,166,823	800,064,068
Molybdenum	"		22,662,732	
Nickel	"		588,683,212	

12.4 Quantity and value of mineral production, 1970 and 1971 (concluded)

Mineral	1970		1971	
	Quantity	Value \$	Quantity	Value \$
METALLICS (concluded)				
Platinum group	<i>oz.t.</i>	482,428		
Selenium	<i>lb.</i>	663,336	475,169	39,821,616
Silver	<i>oz.t.</i>	44,250,804	718,440	6,530,619
Tantalum (Ta ₂ O ₅)	<i>lb.</i>	317,024	46,023,570	71,796,769
Tellurium	"	58,333	449,610	2,901,293
Thorium	"		24,488	148,397
Tin	"	263,716		
Tungsten (WO ₃)	"	3,726,800	318,999	421,079
Uranium (U ₃ O ₈)	"	8,208,734	4,624,208	..
Yttrium (Y ₂ O ₃)	"		8,214,391	..
Zinc	"	2,503,821,441	..	..
		398,858,754	2,499,469,025	418,161,166
NON-METALLICS				
		480,537,626		500,826,829
Arsenious oxide	<i>lb.</i>	141,250	100,000	11,000
Asbestos	<i>ton</i>	1,661,644	1,634,579	203,999,244
Barite	"	147,251	120,765	1,060,543
Diatomite	"			
Feldspar	"	10,656	10,774	216,039
Fluorspar	"		4,595,522	2,819,091
Gemstones	<i>lb.</i>	128,572	145,441	196,332
Gypsum	<i>ton</i>	6,318,523	167,760	15,082,700
Helium	<i>Mcf</i>	..	6,702,100	..
Magnesian dolomite and brucite	<i>ton</i>	..	..	2,673,053
Nepheline syenite	"	486,667	5,801,228	6,206,014
Nitrogen	<i>Mcf</i>		517,190	
Peat moss	<i>ton</i>	320,471	10,167,631	11,803,436
Potash (K ₂ O)	"	3,420,212	108,694,791	134,955,000
Pyrite, pyrrhotite	"	362,669	1,699,474	1,161,800
Quartz	"	3,238,037	6,810,737	7,411,354
Salt	"	5,358,896	36,097,817	40,110,708
Soapstone, talc, pyrophyllite	"	72,055	1,141,894	1,060,136
Sodium sulphate	"	490,547	7,601,778	7,064,250
Sulphur, in smelter gas	"	705,876	7,433,101	4,632,467
Sulphur, elemental	"	3,548,310	28,353,509	21,299,520
Titanium dioxide, etc.	"	..	34,622,589	39,064,142
FUELS				
		1,717,730,749		2,014,409,996
Coal	<i>ton</i>	16,604,164	86,067,421	121,727,177
Natural gas	<i>Mcf</i>	2,277,108,791	315,099,792	342,548,891
Natural gas by-products	<i>bbl</i>	77,783,497	160,109,956	193,191,039
Petroleum, crude	"	461,180,059	1,156,453,580	1,356,942,889
STRUCTURAL MATERIALS				
		450,446,081		512,478,366
Clay products		51,791,258		48,583,262
Cement	<i>ton</i>	7,945,915	155,739,761	191,244,394
Lime	"	1,676,192	21,381,312	23,485,637
Sand and gravel	"	202,656,000	133,558,000	152,628,000
Stone	"	65,322,840	87,975,750	96,537,073
Total		..	5,722,058,591	5,968,002,192

12.5 Percentage of the total value contributed by principal minerals, 1962-71

Mineral	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
METALLICS¹										
Copper	9.9	9.3	9.6	10.2	11.4	13.2	12.9	12.4	13.6	12.7
Gold	5.5	5.0	4.3	3.6	3.2	2.6	2.2	2.0	1.5	1.3
Iron ore	9.2	10.3	11.9	11.0	10.9	10.7	11.3	9.6	10.3	9.3
Lead	1.5	1.5	1.6	2.4	2.3	2.0	1.9	2.0	2.2	1.8
Molybdenum	0.4	0.4	0.6	0.5	0.9	0.9	0.8	1.1	1.0	0.6
Nickel	13.5	11.8	11.2	11.5	9.5	10.5	11.2	10.2	14.5	13.4
Platinum group	1.0	0.7	0.7	1.0	0.8	0.8	1.0	0.7	0.8	0.7
Silver	1.2	1.4	1.2	1.2	1.2	1.4	2.2	1.8	1.4	1.2
Uranium	5.5	4.5	2.5	1.7	1.4	1.2	1.1	1.1	..	..
Zinc	3.9	4.0	5.7	6.6	7.3	7.3	6.9	7.8	7.0	7.0
NON-METALLICS¹										
	7.6	8.3	8.4	8.7	9.1	9.2	9.5	9.5	8.4	8.4
Asbestos	4.6	4.5	4.3	3.9	4.1	3.8	3.9	4.1	3.6	3.4
Gypsum	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Nepheline syenite	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Potash	0.1	0.7	0.9	1.5	1.6	1.5	1.4	1.5	1.9	2.3
Quartz	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Salt	0.8	0.7	0.6	0.6	0.6	0.6	0.7	0.6	0.6	0.7
Sodium sulphate	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.1
Sulphur, in smelter gas	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1
Sulphur, elemental	0.3	0.4	0.6	0.7	1.0	1.6	1.7	1.3	0.5	0.4
Titanium dioxide, etc.	0.4	0.5	0.6	0.6	0.5	0.5	0.6	0.6	0.6	0.7
FUELS¹										
	27.4	29.8	29.5	28.8	29.0	28.7	28.4	30.9	30.0	33.7
Coal	2.4	2.4	2.1	2.0	2.1	1.9	1.1	1.1	1.5	2.0
Natural gas	3.8	4.9	5.1	5.0	4.5	4.5	4.8	5.5	5.5	5.7
Petroleum	19.4	20.2	19.9	19.3	19.9	19.7	19.8	21.4	20.2	22.7

12.5 Percentage of the total value contributed by principal minerals, 1962-71 (concluded)

Mineral	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
STRUCTURAL MATERIALS	12.5	12.4	11.9	11.6	11.9	10.2	9.4	9.4	7.9	8.6
Clay products	1.3	1.3	1.2	1.2	1.1	1.0	1.0	1.1	0.9	0.8
Cement	4.0	3.9	3.9	3.8	3.9	3.3	3.2	3.4	2.7	3.2
Lime	0.6	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.4
Sand and gravel	4.2	4.0	3.7	3.6	3.8	3.2	2.8	2.6	2.3	2.6
Stone	2.4	2.6	2.5	2.5	2.6	2.3	2.0	1.9	1.5	1.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Includes minor items not specified.

12.6 Value of mineral production, by province, 1962-71 (dollars)

Year	Province or territory						
	Newfound- land (incl. Labrador)	Prince Edward Island	Nova Scotia ^r	New Brunswick	Quebec	Ontario	Manitoba
1962	101,858,960	677,906	61,658,584	21,811,575	519,453,166	913,342,141	158,932,169
1963	137,796,707	798,345	66,538,923	28,343,433	540,615,068	874,208,868	169,626,688
1964	182,152,656	831,283	66,228,400	48,678,008 ^r	684,583,430	904,077,030	173,872,576
1965	207,557,627	599,387	71,006,797	82,164,361 ^r	715,900,973	993,730,951	182,143,774
1966	244,020,086	1,062,513	85,595,724	90,208,403 ^r	771,179,636	957,851,890	179,342,104
1967	266,365,149	1,775,001	52,543,570	90,440,172	741,435,723	1,194,548,906	184,678,564
1968	309,711,994	976,742	56,939,905	88,452,486	725,077,850	1,355,628,670	209,625,533
1969	256,935,937	451,500	58,561,575	94,592,565	717,156,067 ^r	1,222,172,333 ^r	246,274,849 ^r
1970	353,260,818	640,000	58,159,483	104,790,555	803,286,050	1,593,038,670	332,214,150
1971	343,431,278	978,000	60,137,535	107,133,849	769,857,462	1,554,153,901	329,913,482
	Saskatchewan ^r	Alberta ^r	British Columbia	Yukon Territory	Northwest Territories	Canada ^r	
1962	241,890,362	596,445,487	234,493,431	13,137,730	17,570,968	2,881,272,479	
1963	274,176,879	644,454,230	260,358,538 ^r	14,366,936	15,891,029	3,027,175,644	
1964	293,287,315	709,486,797	268,723,824	15,204,103	18,081,395	3,365,206,817	
1965	328,851,532	761,892,852	280,156,207 ^r	13,400,535	77,456,418	3,714,861,414	
1966	348,504,856	848,667,120	330,898,073	11,975,757	111,239,350	3,980,545,512	
1967	361,824,120	974,366,130	379,554,811 ^r	14,990,529	118,282,610	4,380,805,285	
1968	357,082,245	1,092,444,193	389,307,488 ^r	21,365,555	115,636,016	4,722,248,677	
1969	344,624,900	1,205,308,015	433,632,681 ^r	35,402,563	119,170,870	4,734,283,855	
1970	379,190,476	1,395,993,663	490,158,498	77,511,933	133,814,295	5,722,058,591	
1971	408,853,455	1,641,222,509	543,655,735	93,110,570	115,554,416	5,968,002,192	

12.7 Value of metallics, non-metallics, fuels and structural materials produced, by province, 1970 and 1971 (dollars)

Year and province or territory	Metallics	Non-metallics	Fuels	Structural materials	Total
1970					
Newfoundland (incl. Labrador)	327,078,458	18,455,678	—	7,726,682	353,260,818
Prince Edward Island	—	—	—	640,000	640,000
Nova Scotia	575,058	19,353,711	21,837,917	16,392,797	58,159,483
New Brunswick	89,939,781	2,785,381	3,086,033	8,979,360	104,790,555
Quebec	484,319,130	209,900,321	24,874	109,041,725	803,286,050
Ontario	1,354,391,094	40,061,738	9,327,756	189,258,082	1,593,038,670
Manitoba	291,157,601	2,244,084	14,858,129	23,954,336	332,214,150
Saskatchewan	32,836,518	118,987,565	217,210,994	10,155,399	379,190,476
Alberta	5,583	31,347,828	1,324,992,273	39,647,979	1,395,993,663
British Columbia	296,819,018	23,473,668	125,216,091	44,649,721	490,158,498
Yukon Territory	63,584,281	13,927,652	—	—	77,511,933
Northwest Territories	132,637,613	—	1,176,682	—	133,814,295
Canada, 1970	3,073,344,135	480,537,626	1,717,730,749	450,446,081	5,722,058,591
1971					
Newfoundland (incl. Labrador)	316,423,850	17,591,712	—	9,415,716	343,431,278
Prince Edward Island	—	—	—	978,000	978,000
Nova Scotia	215,451	20,964,049	23,020,853	15,937,182	60,137,535
New Brunswick	91,049,256	2,902,648	4,038,971	9,142,974	107,133,849
Quebec	436,882,435	207,837,741	25,525	125,111,761	769,857,462
Ontario	1,290,618,170	43,887,065	9,059,931	210,588,735	1,554,153,901
Manitoba	284,315,156	2,420,515	15,412,570	27,765,241	329,913,482
Saskatchewan	16,094,911	145,464,510	236,001,658	11,292,376	408,853,455
Alberta	2,803	23,513,594	1,575,197,912	42,508,200	1,641,222,509
British Columbia	309,809,998	23,870,615	150,236,941	59,738,181	543,655,735
Yukon Territory	80,646,022	12,374,380	90,168	—	93,110,570
Northwest Territories	114,228,949	—	1,325,467	—	115,554,416
Canada, 1971	2,940,287,001	500,826,829	2,014,409,996	512,478,366	5,968,002,192

12.8 Detailed mineral production, by province, 1971 with totals for 1970

Mineral	Province or territory					
		Newfound- land (incl. Labrador)	Nova Scotia	New Brunswick	Quebec	Ontario
METALLICS	\$	316,423,850	215,451	91,049,256	436,882,435	1,290,618,170
Antimony	lb.	—	—	—	—	—
	\$	—	—	—	—	—
Bismuth	lb.	—	—	37,680	122,507	20,910
	\$	—	—	204,602	590,654	113,541
Cadmium	lb.	—	—	135,080	126,730	2,414,008
	\$	—	—	262,055	245,856	4,683,175
Calcium	lb.	—	—	—	—	355,247
	\$	—	—	—	—	291,504
Cobalt	lb.	—	—	—	53,986	3,511,207
	\$	—	—	—	116,610	7,650,337
Columbium (Cb ₂ O ₅)	lb.	—	—	—	2,332,663	—
	\$	—	—	—	2,296,962	—
Copper	lb.	27,959,572	32,565	20,532,244	369,646,647	604,739,883
	\$	14,762,654	17,194	10,841,025	195,173,430	317,527,865
Gold	oz. t.	7,341	—	4,236	646,839	1,133,987
	\$	259,460	—	149,717	22,861,878	40,079,636
Indium	oz. t.	—	—	—	—	—
	\$	—	—	—	—	—
Iron ore	ton	21,876,957	—	—	12,366,686	11,178,670
	\$	289,912,158	—	—	110,864,558	136,205,400
Iron, remelt	ton	—	—	—	—	—
	\$	—	—	—	—	—
Lead	lb.	26,961,000	829,640	130,810,024	1,293,568	17,830,939
	\$	3,639,735	112,001	17,659,353	174,632	2,407,177
Magnesium	lb.	—	—	—	—	14,467,305
	\$	—	—	—	—	5,163,921
Mercury	lb.	—	—	—	—	—
	\$	—	—	—	—	—
Molybdenum	lb.	—	—	—	778,003	—
	\$	—	—	—	1,412,498	—
Nickel	lb.	—	—	—	1,496,428	431,506,689
	\$	—	—	—	2,057,589	583,946,348
Platinum group	oz. t.	—	—	—	—	475,169
	\$	—	—	—	—	39,821,616
Selenium	lb.	—	—	—	550,127	128,000
	\$	—	—	—	5,000,654	1,163,520
Silver	oz. t.	563,604	55,292	5,057,627	4,378,011	18,681,633
	\$	879,222	86,256	7,889,898	6,829,697	29,143,347
Tantalum (Ta ₂ O ₅)	lb.	—	—	—	—	—
	\$	—	—	—	—	—
Tellurium	lb.	—	—	—	11,935	8,100
	\$	—	—	—	72,326	49,086
Thorium	lb.	—	—	—	—	—
	\$	—	—	—	—	—
Tin	lb.	—	—	—	—	—
	\$	—	—	—	—	—
Tungsten (Wo ₃)	lb.	—	—	—	—	—
	\$	—	—	—	—	—
Uranium (U ₃ O ₈)	lb.	—	—	—	—	7,009,985
	\$	—	—	—	—	—
Yttrium (Y ₂ O ₃)	lb.	—	—	—	—	—
	\$	—	—	—	—	—
Zinc	lb.	41,665,400	—	323,028,130	348,837,979	731,450,664
	\$	6,970,621	—	54,042,606	58,360,594	122,371,696
NON-METALLICS	\$	17,591,712	20,964,049	2,902,648	207,837,741	43,887,065
Arsenious oxide	lb.	—	—	—	—	100,000
	\$	—	—	—	—	11,000
Asbestos	ton	69,218	—	—	1,342,260	44,014
	\$	12,497,626	—	—	155,987,089	5,339,743
Barite	ton	—	780,942	—	—	—
	\$	—	—	—	—	—
Diatomite	ton	—	—	—	—	—
	\$	—	—	—	—	—
Feldspar	ton	—	—	—	10,774	—
	\$	—	—	—	216,039	—
Fluorspar	ton	—	—	—	—	—
	\$	—	—	—	—	—
Gemstones	lb.	2,819,091	—	—	—	—
	\$	—	—	—	—	—
Gypsum	ton	560,703	4,889,786	77,478	—	699,041
	\$	1,666,067	10,341,880	259,300	—	1,656,421
Helium	Mcf	—	—	—	—	—
	\$	—	—	—	—	—
Magnesitic dolomite and brucite	ton	—	—	—	—	—
	\$	—	—	—	2,673,053	—
Nepheline syenite	ton	—	—	—	—	517,190
	\$	—	—	—	—	6,206,014
Nitrogen	Mcf	—	—	—	—	—
	\$	—	—	—	—	—
Peat moss	ton	—	8,129	68,243	141,158	18,990
	\$	—	241,638	2,475,827	4,663,295	652,547
Potash (K ₂ O)	ton	—	—	—	—	—
	\$	—	—	—	—	—
Pyrite, pyrrhotite	ton	—	—	—	317,948	—
	\$	—	—	—	1,161,800	—

12.8 Detailed mineral production, by province, 1971 with totals for 1970 (continued)

Mineral		Province or territory				
		Newfound- land (incl. Labrador)	Nova Scotia	New Brunswick	Quebec	Ontario
NON-METALLICS (concluded)						
Quartz	ton \$	215,553	115,200	—	599,898 3,444,175	1,228,455 2,141,272
Salt	ton \$	—	889,256 9,484,389	—	—	4,171,454 24,121,302
Soapstone, talc, pyrophyllite	ton \$	393,375	—	—	314,220	352,541
Sodium sulphate	ton \$	—	—	—	—	—
Sulphur, in smelter gas	ton \$	—	—	22,366 167,521	41,913 313,928	324,920 2,433,651
Sulphur, elemental	ton \$	—	—	—	—	47,772 972,574
Titanium dioxide, etc.	ton \$	—	—	—	39,064,142	—
FUELS						
Coal	ton \$	—	23,020,853 1,965,489	4,038,971 517,209	25,525	9,059,931 —
Natural gas	Mcf \$	—	23,020,853	3,934,987	—	—
Natural gas by-products	bbl \$	—	—	105,114 90,547	170,168 25,525	16,259,718 6,333,160
Petroleum, crude	bbl \$	—	—	9,598 13,437	—	958,104 2,726,771
STRUCTURAL MATERIALS						
Clay products	\$	9,415,716	15,937,182	9,142,974	125,111,761	210,588,735
Cement	ton \$	79,605	1,757,973	627,000	6,118,748 2,618,487	29,815,391 3,570,397
Lime	ton \$	2,932,090	4,837,562	2,828,890	51,348,775 259,765	68,300,184 1,167,053
Sand and gravel	ton \$	5,564,000	6,004,000	4,985,000	3,448,609 41,605,000	16,885,560 77,631,000
Stone	ton \$	5,827,000 204,091 577,021	6,345,000 1,643,081 2,996,647	2,593,000 1,431,075 2,900,250	20,087,000 37,515,419 44,108,629	57,104,000 28,238,491 38,483,600
Total 1971	\$	343,431,278	60,137,535	107,133,849	769,857,462	1,554,153,901
Total 1970	\$	353,260,818	58,159,483	104,790,555	803,286,050	1,593,038,670
		Manitoba	Saskatchewan	Alberta	British Columbia	
METALLICS						
Antimony	lb. \$	284,315,156	16,094,911	—	2,803	309,809,998 323,525
Bismuth	lb. \$	—	—	—	—	243,614 82,521
Cadmium	lb. \$	102,901	33,873	—	—	448,089 1,036,713
Calcium	lb. \$	199,628	65,714	—	—	2,011,223 —
Cobalt	lb. \$	644,580	—	—	—	113,545 245,257
Columbium (Cb ₂ O ₅)	lb. \$	1,417,360	—	—	—	—
Copper	lb. \$	110,528,630	22,291,368	—	—	280,619,150 148,130,684
Gold	oz. t. \$	58,356,093 30,063 1,062,547	11,769,842 25,960 917,530	—	79 2,792	89,413 3,160,213 ..
Indium	oz. t. \$	—	—	—	—	..
Iron ore	ton \$	—	—	—	—	1,929,868 18,153,612
Iron, remelt	ton \$	—	—	—	—	—
Lead	lb. \$	403,064	—	—	—	247,927,691 33,470,238
Magnesium	lb. \$	54,414	—	—	—	—
Mercury	lb. \$	—	—	—	—	..
Molybdenum	lb. \$	—	—	—	—	21,884,729 36,954,846
Nickel	lb. \$	153,136,517 210,562,711	—	—	—	2,543,578 3,497,420
Platinum group	oz. t. \$	—	—	—	—	—
Selenium	lb. \$	32,534	7,779	—	—	—
Silver	oz. t. \$	295,734 694,298 1,083,105	70,711 238,763 372,470	—	7 11	7,674,186 11,971,730
Tantalum (Ta ₂ O ₅)	lb. \$	449,610	—	—	—	—
Tellurium	lb. \$	2,901,293 3,596 21,792	—	857 5,193	—	—

12.8 Detailed mineral production, by province, 1971 with totals for 1970 (continued)

Mineral	Province or territory			
	Manitoba	Saskatchewan	Alberta	British Columbia
METALLICS (concluded)				
Thorium	lb. —	—	—	—
	\$ —	—	—	—
Tin	lb. —	—	—	318,999
	\$ —	—	—	421,079
Tungsten (Wo ₃)	lb. —	—	—	1,335,808
	\$ —	—	—	..
Uranium (U ₃ O ₈)	lb. —	1,204,406	—	—
	\$ —	..	—	—
Yttrium (Y ₂ O ₃)	lb. —	—	—	—
	\$ —	—	—	—
Zinc	lb. 49,972,979	17,294,986	—	305,451,243
	\$ 8,360,479	2,893,451	—	51,101,993
NON-METALLICS				
	\$ 2,420,515	145,464,510	23,513,594	23,870,615
Arsenious oxide	lb. —	—	—	—
	\$ —	—	—	—
Asbestos	ton —	—	—	87,118
	\$ —	—	—	17,800,406
Barite	ton —	—	—	—
	\$ —	—	—	279,601
Diatomite	ton —	—	—	..
	\$ —	—	—	..
Feldspar	ton —	—	—	—
	\$ —	—	—	—
Fluorspar	ton —	—	—	—
	\$ —	—	—	—
Gemstones	lb. —	—	—	167,760
	\$ —	—	—	196,332
Gypsum	ton 130,297	—	—	344,795
	\$ 228,684	—	—	930,348
Helium	Mcf —	..	—	—
	\$ —	..	—	—
Magnesitic dolomite and brucite	ton —	—	—	—
	\$ —	—	—	—
Nepheline syenite	ton —	—	—	—
	\$ —	—	—	—
Nitrogen	Mcf —	..	—	—
	\$ —	..	—	—
Peat moss	ton 24,478	6,748	10,300	59,278
	\$ 842,435	224,631	318,729	2,384,334
Potash (K ₂ O)	ton —	3,999,511	—	—
	\$ —	134,955,000	—	—
Pyrite, pyrrhotite	ton —	—	—	—
	\$ —	—	—	—
Quartz	ton 526,815	90,169	—	37,188
	\$ 1,191,382	72,301	71,471	160,000
Salt	ton 27,009	209,071	245,111	—
	\$ 115,328	4,097,337	2,292,352	—
Soapstone, talc, pyrophyllite	ton —	—	—	—
	\$ —	—	—	—
Sodium sulphate	ton —	5,822,618	1,241,632	—
	\$ —	—	—	—
Sulphur, in smelter gas	ton —	—	—	229,288
	\$ —	—	—	1,717,367
Sulphur, elemental	ton 5,865	22,999	3,012,891	59,753
	\$ 42,686	292,623	19,589,410	402,227
Titanium dioxide, etc.	ton —	—	—	—
	\$ —	—	—	—
FUELS				
	\$ 15,412,570	236,001,658	1,575,197,912	150,236,941
Coal	ton —	3,300,186	8,012,304	4,637,011
	\$ —	6,376,929	42,418,281	45,976,127
Natural gas	Mcf —	71,165,592	2,067,247,488	342,908,830
	\$ —	8,951,676	290,671,829	36,268,945
Natural gas by-products	bbl —	1,561,884	82,206,275	1,909,921
	\$ —	2,844,534	186,338,566	4,007,939
Petroleum, crude	bbl 5,604,571	88,458,641	371,500,922	25,263,130
	\$ 15,412,570	217,828,519	1,055,769,236	63,983,930
STRUCTURAL MATERIALS				
	\$ 27,765,241	11,292,376	42,508,200	59,738,181
Clay products	\$ 321,942	997,983	3,832,845	5,031,775
Cement	ton 487,356	146,019	875,401	906,302
	\$ 13,143,214	3,791,393	19,696,405	24,365,881
Lime	ton —	—	100,483	—
	\$ 972,254	—	1,985,380	—
Sand and gravel	ton 16,695,000	11,321,000	18,679,000	29,253,000
	\$ 12,199,000	6,503,000	16,285,000	24,707,000
Stone	ton 1,012,371	—	183,609	3,286,705
	\$ 1,128,831	—	708,570	5,633,525
Total 1971	\$ 329,913,482	408,853,455	1,641,222,509	543,655,735
Total 1970	\$ 332,214,150	379,190,476	1,395,993,663	490,158,498

12.8 Detailed mineral production, by province, 1971 with totals for 1970 (continued)

Mineral	Province or territory			
		Yukon Territory	Northwest Territories	Canada 1971 1970
METALLICS	\$	80,646,022	114,228,949	2,940,287,001 3,073,344,135
Antimony	lb.	—	—	323,525 726,474
	\$	—	—	243,614 1,104,040
Bismuth	lb.	—	7,578	271,196 590,340
	\$	—	41,149	1,398,035 3,370,554
Cadmium	lb.	59,100	155,400	4,063,805 4,307,953
	\$	114,654	301,476	7,883,782 15,336,313
Calcium	lb.	—	—	355,247 443,557
	\$	—	—	291,504 374,476
Cobalt	lb.	—	—	4,323,318 4,561,213
	\$	—	—	9,429,564 10,207,366
Columbium (Cb ₂ O ₃)	lb.	—	—	2,332,663 4,694,239
	\$	—	—	2,296,962 4,819,951
Copper	lb.	5,132,000	1,378,021	1,442,860,080 1,345,434,265
	\$	2,709,696	727,595	760,016,078 779,242,403
Gold	oz. t.	14,473	308,339	2,260,730 2,408,574
	\$	511,534	10,897,934	79,903,241 88,057,464
Indium	oz. t.	—	—	— —
	\$	—	—	— —
Iron ore	ton	—	—	47,352,181 52,314,020
	\$	—	—	555,135,728 588,631,153
Iron, remelt	ton	—	—	— —
	\$	—	—	30,824,497 31,591,232
Lead	lb.	217,336,142	167,628,110	811,020,178 778,369,611
	\$	29,340,379	22,629,795	109,487,724 123,138,074
Magnesium	lb.	—	—	14,467,305 20,707,110
	\$	—	—	5,163,921 7,140,807
Mercury	lb.	—	—	— —
	\$	—	—	— —
Molybdenum	lb.	—	—	22,662,732 33,771,716
	\$	—	—	38,367,344 57,140,574
Nickel	lb.	—	—	588,683,212 611,762,362
	\$	—	—	800,064,068 830,166,823
Platinum group	oz. t.	—	—	475,169 482,428
	\$	—	—	39,821,616 43,556,597
Selenium	lb.	—	—	718,440 663,336
	\$	—	—	6,530,619 5,704,690
Silver	oz. t.	5,747,703	2,932,446	46,023,570 44,250,804
	\$	8,966,417	4,574,616	71,796,769 81,863,988
Tantalum (Ta ₂ O ₃)	lb.	—	—	449,610 317,024
	\$	—	—	2,901,293 2,251,182
Tellurium	lb.	—	—	24,488 58,333
	\$	—	—	148,397 365,748
Thorium	lb.	—	—	— —
	\$	—	—	— —
Tin	lb.	—	—	318,999 263,716
	\$	—	—	421,079 421,946
Tungsten (Wo ₃)	lb.	—	3,288,400	4,624,208 3,726,800
	\$	—	—	— —
Uranium (U ₃ O ₈)	lb.	—	—	8,214,391 8,208,734
	\$	—	—	— —
Yttrium (Y ₂ O ₃)	lb.	—	—	— —
	\$	—	—	— —
Zinc	lb.	233,134,144	448,633,500	2,499,469,025 2,503,821,441
	\$	39,003,342	75,056,384	418,161,166 398,858,754
NON-METALLICS	\$	12,374,380	—	500,826,829 480,537,626
Arsenious oxide	lb.	—	—	100,000 141,250
	\$	—	—	11,000 15,500
Asbestos	ton	91,969	—	1,634,579 1,661,644
	\$	12,374,380	—	203,999,244 208,146,533
Barite	ton	—	—	120,765 147,251
	\$	—	—	1,060,543 1,388,125
Diatomite	ton	—	—	— —
	\$	—	—	— —
Feldspar	ton	—	—	10,774 10,656
	\$	—	—	216,039 290,541
Fluorspar	ton	—	—	— —
	\$	—	—	2,819,091 4,595,522
Gemstones	lb.	—	—	167,760 128,572
	\$	—	—	196,332 145,441
Gypsum	ton	—	—	6,702,100 6,318,523
	\$	—	—	15,082,700 14,199,415
Helium	Mcf	—	—	— —
	\$	—	—	— —
Magnetitic dolomite and brucite	ton	—	—	— —
	\$	—	—	2,673,053 3,332,000
Nepheline syenite	ton	—	—	517,190 486,667
	\$	—	—	6,206,014 5,801,228
Nitrogen	Mcf	—	—	— —
	\$	—	—	— —
Peat moss	ton	—	—	337,324 320,471
	\$	—	—	11,803,436 10,167,631
Potash (K ₂ O)	ton	—	—	3,999,511 3,420,212
	\$	—	—	134,955,000 108,694,791
Pyrite, pyrrhotite	ton	—	—	317,948 362,669
	\$	—	—	1,161,800 1,699,474

12.8 Detailed mineral production, by province, 1971 with totals for 1970 (concluded)

Mineral	Province or territory				
		Yukon Territory	Northwest Territories	Canada 1971	1970
NON-METALLICS (concluded)					
Quartz	ton	—	—	2,553,884	3,238,037
	\$	—	—	7,411,354	6,810,737
Salt	ton	—	—	5,541,901	5,358,896
	\$	—	—	40,110,708	36,097,817
Soapstone, talc, pyrophyllite	ton	—	—	65,562	72,055
	\$	—	—	1,060,136	1,141,894
Sodium sulphate	ton	—	—	481,919	490,547
	\$	—	—	7,064,250	7,601,778
Sulphur, in smelter gas	ton	—	—	618,487	705,876
	\$	—	—	4,632,467	7,433,101
Sulphur, elemental	ton	—	—	3,149,280	3,548,310
	\$	—	—	21,299,520	28,353,509
Titanium dioxide, etc.	ton	—	—	—	—
	\$	—	—	39,064,142	34,622,589
FUELS	\$	90,168	1,325,467	2,014,409,996	1,717,730,749
Coal	ton	—	—	18,432,199	16,604,164
	\$	—	—	121,727,177	86,067,421
Natural gas	Mcf	869,102	297,588	2,499,023,600	2,277,108,791
	\$	90,168	117,041	342,548,891	315,099,792
Natural gas by-products	bbl	—	—	85,678,080	77,783,497
	\$	—	—	193,191,039	160,109,956
Petroleum, crude	bbl	—	944,083	492,739,049	461,180,059
	\$	—	1,208,426	1,356,942,889	1,156,453,580
STRUCTURAL MATERIALS	\$	—	—	512,478,366 ¹	450,446,081 ²
Clay products	\$	—	—	48,583,262	51,791,258
Cement	ton	—	—	9,066,795	7,945,915
	\$	—	—	191,244,394	155,739,761
Lime	ton	—	—	1,598,254	1,676,192
	\$	—	—	23,485,637	21,381,312
Sand and gravel	ton	—	—	213,291,000 ¹	202,656,000 ²
	\$	—	—	152,628,000 ¹	133,558,000 ²
Stone	ton	—	—	73,514,842	65,322,840
	\$	—	—	96,537,073	87,975,750
Total 1971	\$	93,110,570	115,554,416	5,968,002,192 ¹	...
Total 1970	\$	77,511,933	133,814,295	...	5,722,058,591 ²

¹ Includes 1,554,000 tons of sand and gravel valued at \$978,000 produced in Prince Edward Island.² Includes 827,000 tons of sand and gravel valued at \$640,000 produced in Prince Edward Island.

12.9 Producers' shipments of nickel, by province, and total value, 1965-71

Year	Quebec tons	Ontario tons	Manitoba tons	Saskatchewan tons	British Columbia tons	Canada Quantity tons	Value \$
1965	3,026	191,283	63,212	—	1,661	259,182	430,402,105
1966	3,975	160,214	57,812	15	1,594	223,610	377,479,471
1967	1,622	190,059	54,714	162	2,090	248,647	463,139,703
1968	886	203,747	57,923	144	1,658	264,358	528,235,798
1969	155	146,781	64,920	266	1,489	213,611	481,055,140
1970	801	224,255	79,121	—	1,704	305,881	830,166,823
1971	748	215,754	76,568	—	1,271	294,341	800,064,068

12.10 Producers' shipments of lead from Canadian ores, by province, and total value, 1965-71

Year	Province or territory					
	Newfoundland tons	Nova Scotia tons	New Brunswick tons	Quebec tons	Ontario tons	
1965	21,916	1,841	43,654	4,213	1,943	
1966	21,754	1,488	51,864	3,909	1,985	
1967	19,940	397	47,016	2,882	5,529	
1968	18,914	2,600	54,350	2,936	12,900	
1969	22,207	2,735	51,092	1,558	12,097	
1970	17,730	1,299	62,675	2,159	11,960	
1971	13,481	415	65,405	647	8,915	
	Manitoba tons	British Columbia tons	Yukon Territory tons	Northwest Territories tons	Canada Quantity tons	Value \$
1965	1,316	125,167	8,926	82,831	291,807	90,460,323
1966	557	105,747	7,988	105,330	300,622	89,827,072
1967	1,785	103,827	7,650	127,377	317,963 ¹	89,029,711
1968	1,477	115,586	3,611	125,138	340,175 ¹	91,439,162
1969	560	105,036	14,028	106,457	318,632 ¹	96,672,869
1970	505	107,419	65,835	119,603	389,185	123,138,074
1971	201	123,964	108,668	83,814	405,510	109,487,724

¹ Includes 1,560 tons of producers' shipments from Saskatchewan in 1967, 2,663 tons in 1968 and 2,862 in 1969.

12.11 Producers' shipments of zinc, by province, and total value, 1965-71

Year	Province or territory					
	Newfoundland tons	Nova Scotia tons	New Brunswick tons	Quebec tons	Ontario tons	Manitoba tons
1965	36,187	299	123,595	272,883	60,675	40,763
1966	34,160	678	142,395	293,148	82,395	34,967
1967	34,851	23	151,357	245,883	268,532	36,258
1968	36,729	113	135,429	213,153	346,758	45,531
1969	32,903	132	152,728	198,531	360,286	48,889
1970	29,913	—	161,094	205,030	340,242	39,463
1971	20,833	—	161,514	174,419	365,725	24,986
	Saskatchewan tons	British Columbia tons	Yukon Territory tons	Northwest Territories tons	Canada Quantity tons	Value \$
1965	27,983	158,336	6,624	94,690	822,035	248,254,768
1966	28,909	152,562	5,725	189,167	964,106	291,160,076
1967	28,412	131,415	4,738	209,982	1,111,453	322,099,092
1968	29,012	146,098	2,653	203,915	1,159,392	326,948,596
1969	25,143	148,333	16,531	224,148	1,207,624	367,842,352
1970	21,833	137,795	77,983	238,558	1,251,911	398,858,754
1971	8,647	152,726	116,567	224,317	1,249,734	418,161,166

12.12 Producers' shipments of gold, by province, and total value, 1965-71

Year	Province or territory						
	Newfoundland oz. t.	Nova Scotia oz. t.	New Brunswick oz. t.	Quebec oz. t.	Ontario oz. t.	Manitoba oz. t.	Saskatchewan oz. t.
1965	23,657	—	1,659	905,380	1,946,003	67,685	46,173
1966	25,667	20	1,953	935,459	1,660,750	64,565	42,678
1967	27,258	1	1,421	835,190	1,495,385	53,945	47,895
1968	7,803	3	2,202	768,068	1,379,779	39,155	44,970
1969	8,982	13	1,396	761,370	1,229,666	28,011	39,562
1970	6,811	—	5,120	703,015	1,162,042	34,642	44,889
1971	7,341	—	4,236	646,839	1,133,987	30,063	25,960
	Alberta oz. t.	British Columbia oz. t.	Yukon Territory oz. t.	Northwest Territories oz. t.	Canada Quantity oz. t.	Value \$	
1965	200	117,764	45,031	452,479	3,606,031	136,051,943	
1966	182	120,705	43,466	424,029	3,319,474	125,177,364	
1967	146	126,823	17,900	380,304	2,986,268	112,731,618	
1968	146	124,422	24,167	352,306	2,743,021	103,439,321	
1969	133	117,792	29,682	328,502	2,545,109	95,925,158	
1970	152	101,197	17,862	332,844	2,408,574	88,057,464	
1971	79	89,413	14,473	308,339	2,260,730	79,903,241	

12.13 Producers' shipments of silver, by province, and total value, 1965-71

Year	Average price per oz. t. (Canadian funds) ¢	Province or territory					
		Newfoundland oz. t.	Nova Scotia oz. t.	New Brunswick oz. t.	Quebec oz. t.	Ontario oz. t.	Manitoba oz. t.
1965	140.0	1,086,978	443,630	2,745,274	5,154,403	10,822,213	707,024
1966	139.9	1,097,425	540,663	3,108,669	5,214,146	10,900,204	547,797
1967	173.2	1,073,153	89,238	3,017,416	4,659,232	14,309,391	629,311
1968	231.3	895,706	368,389	3,654,079	3,986,371	21,844,592	616,954
1969	193.1	1,024,639	267,585	4,058,976	4,334,867	22,260,439	462,763
1970	185.0	793,402	71,668	4,577,956	4,261,959	19,876,430	660,755
1971	156.0	563,604	55,292	5,057,627	4,378,011	18,681,633	694,298
		Saskatchewan oz. t.	British Columbia oz. t.	Yukon Territory oz. t.	Northwest Territories oz. t.	Canada Quantity ¹ oz. t.	Value \$
1965		640,995	4,991,109	4,615,995	1,064,824	32,272,464	45,181,450
1966		603,358	5,548,823	4,194,580	1,662,192	33,417,874	46,751,605
1967		605,215	6,082,617	3,869,374	1,980,228	36,315,189	62,897,907
1968		695,893	7,121,250	2,077,987	3,751,563	45,012,797	104,114,599
1969		649,699	5,760,534	2,685,060	2,026,367	43,530,941	84,014,909
1970		491,953	6,511,316	4,240,709	2,764,642	44,250,804	81,863,988
1971		238,763	7,674,186	5,747,703	2,932,446	46,023,570	71,796,769

¹ Includes relatively small quantities produced in Alberta.

12.14 Quantity and value of producers' shipments of uranium (U₃O₈), by province, 1965-71

Year	Ontario		Saskatchewan		Canada	
	Quantity lb.	Value \$	Quantity lb.	Value \$	Quantity lb.	Value \$
1965	6,825,046	47,234,892	2,060,167	15,126,485	8,885,213	62,361,377
1966	5,875,698	42,758,135	1,987,992	11,576,652	7,863,690	54,334,787
1967	5,450,639	41,418,268	2,025,589	11,603,668	7,476,228	53,021,936
1968	5,361,460	39,163,777	2,040,736	13,120,803	7,402,196	52,284,580
1969		40,307,489		12,843,168	7,707,735	53,150,657
1970	6,676,841	..	1,531,893	..	8,208,734	..
1971	7,009,985	..	1,204,406	..	8,214,391	..

12.15 Quantity and value of producers' shipments of asbestos, 1965-71

Year	Quantity tons	Value \$
1965	1,388,212	146,188,473
1966	1,489,055	163,654,863
1967	1,452,104	165,118,786
1968	1,595,951	185,024,662
1969	1,611,168	195,211,101
1970	1,661,644	208,146,533
1971	1,634,579	203,999,244

12.16 Producers' shipments of potash, 1965-71

Year	Tons K ₂ O eq.	Value \$
1965	1,491,031	55,970,527
1966	1,990,053	62,664,666
1967	2,383,253	67,395,461
1968	2,917,611	65,121,399
1969	3,492,001	69,382,516
1970	3,420,212	108,694,791
1971	3,999,511	134,955,000

12.17 Producers' shipments of salt, by province, and total value, 1965-71

Year	Nova Scotia tons	Ontario tons	Manitoba tons	Saskatchewan tons	Alberta tons	Canada	
						Quantity tons	Value \$
1965	459,114	3,900,484	29,834	78,958	115,706	4,584,096	23,985,844
1966	474,981	3,782,191	27,069	84,979	122,814	4,492,034	23,846,188
1967	446,865	4,673,278	25,453	89,732	126,135	5,361,463	27,808,129
1968	473,584	4,143,759	27,120	99,480	120,381	4,864,324	31,170,092
1969	500,965	3,760,042	42,607	107,290	246,861	4,657,765	30,406,109
1970	684,495	4,158,157	29,311	203,195	283,738	5,358,896	36,097,817
1971	889,256	4,171,454	27,009	209,071	245,111	5,541,901	40,110,708

12.18 Quantity and value of sulphur produced from smelter gases and in pyrite and pyrrhotite shipments, and of elemental sulphur sales, 1965-71

Year	Sulphur in smelter gases		Producers' shipments pyrite and pyrrhotite			Sales of elemental sulphur ¹	
	Quantity ² tons	Value \$	Gross weight ³ tons	Sulphur content tons	Value \$	Quantity tons	Value \$
1965	444,758	4,317,362	382,177	186,960	1,285,252	2,068,394	26,394,595
1966	500,338	6,050,750	326,954	162,300	1,139,141	2,041,528	40,253,685
1967	546,491	6,701,804	377,941	182,377	1,702,516	2,499,205	68,613,866
1968	666,370	8,915,202	314,197	155,797	2,286,442	2,580,746	79,963,600
1969	676,189	7,953,011	376,159	171,212	2,219,362	2,973,506	60,725,726
1970	705,876	7,433,101	362,669	175,523	1,699,474	3,548,310	28,353,509
1971	618,487	4,632,467	317,948	154,000 ^e	1,161,800	3,149,280	21,299,520

¹ Recovered from sour natural gas and nickel sulphide ores.² Includes sulphur in acid made from roasting zinc sulphide concentrates at Arvida and Port Maitland.³ From 1965, excludes pyrite and pyrrhotite used to produce iron residues or sinter.**12.19 Producers' shipments of gypsum, by province, and total value, 1965-71**

Year	Newfoundland tons	Nova Scotia tons	New Brunswick tons	Ontario tons	Manitoba tons	British Columbia tons	Canada	
							Quantity tons	Value \$
1965	442,655	4,862,485	101,012	531,918	159,854	207,705	6,305,629	12,533,384
1966	459,685	4,502,836	108,207	565,185	134,225	206,026	5,976,164	12,312,220
1967	439,156	3,757,329	88,641	536,375	133,897	219,986	5,175,384	11,348,351
1968	435,231	4,441,080	84,668	570,715	151,872	243,374	5,926,940	11,825,382
1969	469,339	4,754,642	81,457	622,058	165,258	280,894	6,373,648	14,995,150
1970	491,354	4,775,233	72,753	537,271	171,646	270,266	6,318,523	14,199,415
1971	560,703	4,889,786	77,478	699,041	130,297	344,795	6,702,100	15,082,700

12.20 Production and exports of nepheline syenite, 1965-71

Year	Production		Exports	
	Quantity tons	Value \$	Quantity tons	Value \$
1965	339,982	3,415,387	247,200	2,968,702
1966	366,696	4,109,744	263,624	3,098,000
1967	401,601	4,752,875	307,613	3,532,000
1968	426,595	4,738,008	323,182	4,090,000
1969	500,571	5,935,239	395,613	5,120,000
1970	486,667	5,801,228	382,947	5,063,000
1971	517,190	6,206,014	404,240 ^D	5,229,000 ^D

12.21 Producers' shipments and value, imports, exports and apparent consumption of cement 1965-71

Year	Shipments (sold or used)		Imports ¹ tons	Exports tons	Apparent consumption ² tons
	tons	\$			
1965	8,427,702	142,523,169	37,619	334,887	8,130,434
1966	8,930,552	156,300,622	50,615	407,395	8,573,772
1967	7,994,954	143,150,284	44,118	328,018	7,711,054
1968	8,165,805	152,003,739	51,500	366,506	7,850,799
1969	8,250,032	162,091,044	53,396	634,208	7,669,220
1970	7,945,915	155,739,761	97,191	566,521	7,476,585
1971	9,066,795	191,244,394	55,873 ^D	887,845 ^D	8,234,823 ^D

¹ Standard portland cement.² Shipments plus imports less exports.

12.22 Producers' shipments of sand and gravel, by province, and total value, 1965-71

Year	Province or territory					
	New- foundland tons	Prince Edward Island tons	Nova Scotia tons	New Brunswick tons	Quebec tons	Ontario tons
1965	4,258,678	412,064	6,638,138	4,569,025	45,101,021	88,564,687
1966	3,599,421	660,726	8,109,366	5,367,393	45,876,782	94,123,982
1967	3,143,938	1,327,600	6,056,265	7,604,962	45,012,646	94,751,250
1968	3,812,003	383,165	9,380,262	6,361,658	42,955,933	84,095,642
1969	3,957,022	902,218	9,167,109	3,993,628	41,500,000	82,657,386
1970	4,335,000	827,000	7,187,000	6,883,000	36,795,000	82,877,000
1971	5,564,000	1,554,000	6,004,000	4,985,000	41,605,000	77,631,000

Year	Manitoba tons	Saskatchewan tons	Alberta tons	British Columbia tons	Canada Quantity tons	Value \$
1965	10,462,840	8,808,104	14,377,337	22,068,370	205,260,264	133,819,824
1966	9,675,796	8,314,360	12,886,213	24,295,400	212,909,439	149,826,435
1967	10,289,157	9,671,401	14,187,340	23,168,141	215,212,700	146,697,783
1968	9,563,927	9,167,702	13,600,098	25,914,119	205,234,509	129,500,553
1969	8,142,268	7,673,225	14,903,937	28,684,705	201,581,498	122,159,146
1970	14,930,000	8,963,000	16,042,000	23,817,000	202,656,000	133,558,000
1971	16,695,000	11,321,000	18,679,000	29,253,000	213,291,000	152,628,000

12.23 Producers' shipments of stone¹, by province, and total value, 1965-71

Year	Province or territory					
	New- foundland tons	Prince Edward Island tons	Nova Scotia tons	New Brunswick tons	Quebec tons	
1965	174,985	225,306	429,078	2,139,517	44,159,242	
1966	153,000	200,000	605,458	3,544,301	57,976,286	
1967	240,000	725,383	585,015	3,265,148	47,764,482	
1968	876,768	439,775	819,788	2,137,748	34,952,128	
1969	189,929	—	1,015,901	1,208,512	32,008,732	
1970	182,400	—	1,191,998	1,321,454	30,143,792	
1971	204,091	—	1,643,081	1,431,075	37,515,419	

Year	Ontario tons	Manitoba tons	Alberta tons	British Columbia tons	Canada Quantity tons	Value \$
1965	24,659,053	970,536	167,782	3,832,606	76,758,105	94,847,021
1966	25,702,843	2,022,876	144,433	3,537,321	93,886,518	112,020,652
1967	25,744,989	2,012,973	141,509	3,527,809	84,007,308	103,888,272
1968	28,636,257	2,305,900	220,523	5,550,880	75,939,767	95,658,075
1969	27,034,506	699,123	314,701	5,005,608	67,477,012	88,186,262
1970	27,673,376	1,272,690	166,147	3,370,983	65,322,840	87,975,750
1971	28,238,491	1,012,371	183,609	3,286,705	73,514,842	96,537,073

¹ Excludes limestone used to make lime or cement.

12.24 Value (total sales) of producers' shipments of clay products made from domestic clays, by province, 1965-71 (dollars)

Year	Province or territory				
	Newfoundland	Nova Scotia	New Brunswick	Quebec	Ontario
1965	72,717	1,828,385	667,704	6,520,653	25,130,709
1966	172,700	1,525,004	618,651	6,278,308	25,799,667
1967	199,570	1,390,252	566,500	5,611,049	27,450,940
1968	152,200	1,506,061	630,000	5,888,566	30,629,362
1969	120,280	1,625,102	584,856	6,431,629	31,672,797
1970	37,304	2,815,602	940,354	8,159,946	28,649,157
1971	79,605	1,757,973	627,000	6,118,748	29,815,391
	Manitoba	Saskatchewan	Alberta	British Columbia	Canada
1965	482,620	1,380,916	3,555,006	3,198,872	42,837,582
1966	487,172	1,395,489	3,422,614	3,256,480	42,956,085
1967	526,405	1,158,495	4,117,469	3,336,145	44,356,825
1968	451,358	1,454,597	4,424,543	3,584,757	48,721,444
1969	345,846	1,717,850	4,640,275	4,027,280	51,165,915
1970	345,876	1,818,847	4,656,989	4,367,183	51,791,258
1971	321,942	997,983	3,832,845	5,031,775	48,583,262

12.25 Quantity and value of production¹ of crude petroleum, by province, 1965-71

Year	Province or territory							
	New Brunswick		Ontario		Manitoba		Saskatchewan	
	Quantity <i>bbl</i>	Value \$	Quantity <i>bbl</i>	Value \$	Quantity <i>bbl</i>	Value \$	Quantity <i>bbl</i>	Value \$
1965	4,103	5,744	1,279,162	4,093,318	4,946,509	11,530,305	87,788,935	200,992,767
1966	6,853	9,591	1,323,781	4,230,278	5,230,712	13,057,426	93,218,119	211,797,159
1967	8,837	12,372	1,240,159	3,523,664	5,585,141	13,998,039	92,534,900	211,721,868
1968	7,648	10,707	1,151,481	3,166,826	6,204,920	15,569,882	91,889,243	206,942,845
1969	9,176	12,846	1,161,611	3,117,031	6,204,651	15,614,716	87,413,988	196,067,467
1970	9,675	13,544	1,048,168	2,839,904	5,908,389	14,858,129	89,486,610	199,769,908
1971	9,598	13,437	958,104	2,726,771	5,604,571	15,412,570	88,458,641	217,828,519
	Alberta		British Columbia		Northwest Territories		Canada	
	Quantity <i>bbl</i>	Value \$	Quantity <i>bbl</i>	Value \$	Quantity <i>bbl</i>	Value \$	Quantity <i>bbl</i>	Value \$
1965	184,155,669	473,132,745	13,502,539	28,592,977	644,998	614,941	292,321,915	718,962,797
1966	203,339,433	522,989,385	16,680,707	36,360,605	749,654	861,945	320,549,259	789,306,389
1967	231,543,449	591,710,194	19,697,369	44,841,061	677,937	870,810	351,287,792	866,678,008
1968	257,281,177	660,485,368	22,205,516	50,205,245	751,592	906,871	379,491,577	937,287,744
1969	290,011,702	740,435,043	25,387,183	58,356,733	801,341	966,898	410,989,652	1,014,570,734
1970	338,403,241	876,886,679	25,477,973	60,943,312	846,003	1,142,104	461,180,059	1,156,453,580
1971	371,500,922	1,055,769,236	25,263,130	63,983,930	944,083	1,208,426	492,739,049	1,356,942,889

¹ Gross production of crude oil and condensate, less returned to formation.**12.26 Natural gas production¹, by province and total value, 1965-71**

Year	Province or territory							
	New Brunswick		Quebec		Ontario		Saskatchewan	
	Quantity <i>Mcf</i>	Value \$	Quantity <i>Mcf</i>	Value \$	Quantity <i>Mcf</i>	Value \$	Quantity <i>Mcf</i>	Value \$
1965	105,359	105,609	—	—	12,699,483	5,798,330	42,734,910	5,030,276
1966	97,403	89,913	—	—	15,537,395	5,939,946	49,867,762	6,122,521
1967	103,877	88,002	59,130	8,870	14,228,759	5,431,117	49,975,781	6,638,205
1968	112,967	96,878	137,573	20,636	12,065,829	4,598,927	56,771,626	7,211,055
1969	106,520	95,016	137,897	20,684	11,332,097	4,275,152	58,655,877	7,243,913
1970	131,160	108,011	165,825	24,874	17,063,893	6,487,852	62,594,067	7,331,962
1971	105,114	90,547	170,168	25,525	16,259,718	6,333,160	71,165,592	8,951,676
	Alberta		British Columbia		Northwest Territories		Canada	
	Quantity <i>Mcf</i>	Value \$	Quantity <i>Mcf</i>	Value \$	Quantity <i>Mcf</i>	Value \$	Quantity <i>Mcf</i>	Value \$
1965	1,023,294,574	132,055,946	157,920,967	15,930,215	43,068	18,088	1,236,798,361	158,938,464
1966	1,090,691,124	146,609,428	185,591,319	19,402,660	46,238	19,522	1,341,831,241	178,183,990
1967	1,181,927,668	161,807,336	225,399,348	23,992,783	40,589	17,137	1,471,735,152	197,983,450
1968	1,367,682,311	186,033,533	259,866,922	27,869,402	42,602	17,979	1,696,679,650	225,848,410
1969	1,605,658,477	218,106,264	301,997,823	32,572,549	43,723	18,452	1,977,932,414	262,332,030
1970	1,870,507,110	265,912,073	326,564,797	35,200,442	81,939	34,578	2,277,108,791	315,099,792
1971	2,067,247,488	290,671,829	342,908,830	36,268,945	297,588	117,041	2,499,023,600 ²	342,548,891 ²

¹ Gross production, less field-flared and waste and re-injected.² Includes 869,102 Mcf, value \$90,168, produced in the Yukon Territory. 1971 is the first reporting year for this area.

12.27 Coal production, by province, and total value, 1965-71

Year	Nova Scotia tons	New Brunswick tons	Saskatchewan tons	Alberta tons	British Columbia tons	Yukon Territory tons	Canada Quantity tons	Value \$
1965	4,154,211	995,260	2,113,174	3,413,361	815,262	8,801	11,500,069	76,294,969
1966	3,866,203	896,853	2,084,293	3,461,026	866,225	5,273	11,179,873	81,800,741
1967	3,748,451	837,029	1,996,986	3,596,308	960,648	1,912	11,141,334	56,500,237 ¹
1968	3,131,745	797,359	2,250,219	3,920,120	889,564	—	10,989,007	53,969,558 ¹
1969	2,621,330	701,952	2,020,105	4,426,060	902,432	—	10,671,879	50,578,283 ¹
1970	2,122,358	395,642	3,819,191	6,783,911	3,483,062	—	16,604,164	86,067,421 ¹
1971	1,965,489	517,209	3,300,186	8,012,304	4,637,011	—	18,432,199	121,727,177 ¹

¹ Excludes subvention payments; prior to 1967, values include whatever amounts of subvention aids the various mines may have included in their returns.

12.28 Imports of anthracite, bituminous and lignite coal and briquettes and exports of domestic coal, 1965-71

Year	Imports of coal and briquettes			Total		Exports of domestic coal ¹	
	Anthracite tons	Bituminous ^{2,3} tons	Briquettes ⁴ tons	tons	\$	tons	\$
1965	640,161	15,955,232	7,934	16,603,327	126,200,054	1,225,994	12,671,785
1966	594,193	15,842,562	6,583	16,443,338	141,038,000	1,228,820	13,202,161
1967	525,645	15,588,545	8,489	16,122,679	145,544,000	1,338,353	15,091,852
1968	430,197	16,616,548	6,062	17,052,807	160,391,000	1,447,012	16,336,038
1969	436,017	16,911,387	6,061	17,353,465	113,894,378	1,377,872	9,451,102
1970	353,444	18,510,335	10,165	18,873,944	150,831,860	4,391,575	29,155,397
1971	404,231	17,731,950	8,347	18,144,528	151,389,000	7,733,775	86,564,000

¹ Excludes briquettes.

² Prior to 1964, figures include coal ex-warehoused for ships' stores.

³ Includes foreign coal re-exported from Canada.

⁴ Coal and coke briquettes.

12.29 Consumption of Canadian and imported coal in Canada, 1965-71

Year	Canadian coal ¹		Imported coal 'entered for consumption' ²				Grand total tons	Con- sumption per capita tons
	tons	%	From United States tons	From Britain tons	Total ³ tons	%		
1965	10,181,171	38.0	16,590,348	5,045	16,593,547	62.0	26,774,718	1.35
1966	10,117,756	38.1	16,436,755	—	16,435,111	61.9	26,552,867	1.32
1967	9,764,754	37.7	16,114,190	—	16,113,329	62.3	25,878,083	1.26
1968	9,879,860	36.7	17,046,745	—	17,044,880	63.3	26,924,740	1.30
1969	8,928,341	34.0	17,347,404	—	17,346,667	66.0	26,275,008	1.25
1970	10,869,507	37.0	18,863,779	—	18,847,329	64.0	29,716,836	1.39
1971	10,477,572	37.0	18,136,181	—	18,088,287	63.0	28,565,859	1.32

¹ The sum of Canadian coal mines' sales, colliery consumption, coal supplied to employees and coal used in making coke, etc., less the tonnage of coal exported.

² Imports of briquettes are not included in this table but are shown separately in Table 12.28.

³ Deductions have been made from this column to take account of foreign coal re-exported from Canada; bituminous coal ex-warehoused for ships' stores was deducted for the years prior to 1964.

Sources

12.1 - 12.29 Minerals and Metals Division, Mineral Resources Branch, Department of Energy, Mines and Resources; and Manufacturing and Primary Industries Division, Industry Statistics Branch, Statistics Canada.

Chapter 13

Energy

In an industrialized society the term energy encompasses not only the final form of energy as purchased by the ultimate customer in the form of electricity, heat, steam or fossil fuel but also the resources such as generating stations, refineries, pipelines and transmission systems which are required to process and transport the energy. Energy may be employed directly by the combustion of fossil fuels (coal, oil and natural gas) or it may be converted into a secondary form — electricity, using as a primary source the same fossil fuels. In addition, electrical energy is produced from hydraulic resources and in thermal generating stations based on the controlled fission of uranium.

Topography, geology, precipitation and geography all play a significant role in the availability of energy resources, and in all of these Canada is singularly well-endowed.

Canada's energy sources of water power are invariably converted to electrical energy and limited only by their accessibility and by the state of the technology required to transmit developed power to areas of demand. Unlike other forms of energy, electricity cannot be economically stored in large quantities. Consequently, it is produced only to meet a specific demand and this fact accounts for a substantial reserve of generating equipment which is designed to meet daily and seasonal variations in that demand.

The non-renewable fossil fuel resources of coal, oil and natural gas are more diverse in their uses. Coal is used not only to fuel steam plants to produce electricity, and as a direct-heating commodity at the industrial and domestic levels, but carbonized coking coal is essential in steel manufacturing. Oil is refined into a variety of products to operate engines of all types (including automobile, railway and aircraft), serves as a source of heat for furnaces and boilers (some of which is converted to electrical energy) and also forms the base of a vast petrochemical industry. The supply of oil is limited not only by the number, extent and dispersal of the sites where it may be found but also by the capacity and accessibility of the total delivery system, including the pipelines needed to move raw crude to the refineries or by the relative ease of access for imported crude, destined for refining, entering the delivery system at deep-water ports from tankers of ever-increasing size. Natural gas, some of which may be used as it is found, must also be gathered and distributed through pipelines to market areas or to treatment plants, as is the case with much of the gas in Canada, to be purified and to have valuable by-products such as the pentanes, butane and sulphur removed.

While natural gas is not well suited to mobile applications it is directly competitive with oil and coal in stationary fuel use. Its clean burning qualities and simplicity in burning and control make it especially attractive for domestic and industrial use.

It may seem difficult to separate the fossil fuel industry from the mining industry but once the products are extracted and enter the delivery system, which consists of the gathering, transmission, processing and marketing chain, they become a part of the energy supply base.

13.1 Energy policy

13.1.1 Department of Energy, Mines and Resources

The Energy Development Sector of the Department is responsible for co-ordinating, promoting and recommending policies and programs with respect to energy on a national scale. Its mandate entails studies and appraisals of all aspects of energy resource development, production, transportation, processing and use. It is concerned with such matters as the quantity and quality of existing and projected resources of energy; the demand for energy in Canada and whether there are surplus resources available; regional development aspects associated with energy; energy transportation systems and the lead time for their development; policies to control foreign ownership of energy resources; the role of the federal government itself vis-à-vis energy resource development; the economic impact of the energy industries and the financial needs of those industries; the scale and type of energy research that should be carried on in Canada; the outlook for developing new energy resources to meet future needs; and the environmental problems posed by the development, transportation, processing and use of various energy forms. It also has a mandate for the management and conservation of non-renewable resources in certain land and off-shore areas under federal

jurisdiction. All of these matters require increased attention on the part of government because of the growing importance of energy in Canada's economic development and international relations.

The Sector is divided into two operating components. One of these consists of the Resource Management and Conservation Branch which has as its principal function the administration and management of federal interests in mineral resources off Canada's east and west coasts and in Hudson Bay and Hudson Strait.

The second operating component, made up of eight sections, is responsible for the energy policy functions of the Department. Six of these sections are responsible for formulating policy advice on individual energy resources and are headed by senior energy advisers. The other two sections have responsibilities relating to energy in its total context: the first with reference to financial and corporate aspects and the second, for co-ordinating energy information and policy recommendations from the specialist sections into an integrated total energy policy assessment.

13.1.2 National Energy Board

Since its establishment in 1959 the National Energy Board, which reports to Parliament through the Minister of Energy, Mines and Resources, has pursued its two main functions, regulatory and advisory, for the broad purpose of ensuring that the best interests of Canada are served in the use of its energy resources. Its regulatory functions are quasi-judicial or administrative in nature. The quasi-judicial functions pertain to the granting of certificates authorizing the construction of interprovincial and international pipelines and international power lines, the issuance of licences to export gas or power or to import gas or motor gasoline as well as the regulation of rates, tolls and tariffs of oil and gas pipelines under the Board's jurisdiction. Regulatory functions of an administrative character include safety orders in respect of pipelines, and approval of pipeline utility crossings.

The Board consists of seven full-time members appointed by the Governor in Council to hold office for a term of seven years, with provision for reappointment until a member reaches the age of 70.

Part II of the Act confers broad advisory functions on the Board including the requirement that it study, report on and recommend to the Minister "such measures within the jurisdiction of the Parliament of Canada as it considers necessary or advisable in the public interest for the control, supervision, conservation, use, marketing and development of energy and sources of energy". The Minister may also require the Board to prepare energy studies and reports.

The Board maintains a continuous review of the price of all gas licensed for export and where, in the Board's opinion, there has been a significant increase in prices for competing gas supplies or for alternative energy sources, the Governor in Council may, on the recommendation of the Board, order the establishment of a new price.

The Board is also charged with administration of the National Oil Policy established to foster the development and use of oil resources within Canada. Attaining this objective involves protecting indigenous crude oil products in domestic markets, to which the Board's motor gasoline import licensing is related, and encouraging the export of surplus oil when an adequate determination has been made of Canadian requirements.

The National Power Policy, announced in 1963, encourages the development of large-scale power sources at lowest possible cost, the distribution of the benefits thereof as widely as possible through interconnections between power systems within Canada, and the long-term export of large blocks of power where such exports will induce early development of Canadian power resources. This policy also encourages the export of various classes of power under suitable interconnection agreements to provide for mutual assistance in emergencies and for other economic benefits that can be derived by both parties through co-ordinated operation and development. To further these aims, the Board co-operates with other agencies in the consideration of interprovincial and international interconnections of electric power systems. It is worth noting that most of the major electrical utilities in Canada and the United States are now interconnected with neighbouring systems and operate as part of one vast power grid.

In February 1971 the Board convened its first public hearing under Part IV of the Act for the determination of just and reasonable tolls for a major gas pipeline company. The hearing,

involving an application by TransCanada PipeLines Limited to increase rates, was divided into two phases. The decision on the first phase, establishing the applicant's total cost of service, was issued in December 1971. The second phase, considering just and reasonable tolls and tariffs to recover such total cost of service, continued in 1972 and a decision is expected in the spring of 1973.

The Board conducts regular examinations of the accounts and records of gas and oil pipeline companies under its jurisdiction. Such examinations ensure conformity with the Board's Uniform Accounting Regulations and provide detailed financial information which is essential to administering the regulatory functions of the Board. The Board also conducts special studies of a financial nature and maintains close liaison with various sectors of the national and international financial communities.

The Board conducts continuing studies of energy matters in order to maintain a bank of current knowledge which is necessary for the Board to perform its regulatory and advisory functions. Energy supply and demand forecasts are a continuing part of the Board's work. Studies include both the Canadian and foreign markets since fuels and, to a more limited extent, electric power are traded internationally.

13.2 Fuels

The word "fuel", derived from the archaic French *fouaille*, implies a heat source. Up to the present time, mankind has depended for its survival and development on organic fuels but, with the emergence of nuclear energy for civilian use, inorganic fuel is now assuming economic significance.

Fossil fuels with their main component — carbon — will continue to provide the largest range of products from the pure form to compounds that are useful to man. They may even provide nutrition to man if natural foods become scarce. Although the world is benefiting at present by the upsurge in the availability of hydrocarbons, coal as a carbon source should not be discarded. In fact, all fossil fuels in the future may have to contribute collectively to the energy and chemical needs of the world.

The challenge to the bulk use of fossil fuels seems to be nuclear energy which may constitute about 20% of the world's energy by the year 2000, by which time the consumption of energy may be quadrupled from the present level of about 53 million barrels per day of oil equivalent. The world's present economic uranium resources are considered to be larger than the total usable fossil fuel resources but they are subject to the principal uncertainty — the efficiency of fuel utilization which at present amounts to only about 1% of the theoretical potential energy. Nevertheless, nuclear energy may make rapid strides in the fields of generation of electric power, district or large-complex heating, and some types of transportation. Higher extractions of uranium and thorium from lower-grade ores and the development of breeder reactors may ensure that the supply of source materials is adequate.

In Canada, the fortuitous occurrence of ores in strategic and geographically favourable locations together with the creation of nuclear technology gives great impetus to the development of nuclear energy. Canada is spending about 70% of its federal energy research budget on nuclear research and has trained many nuclear scientists and engineers and hence may be expected to play a role in the world with its nuclear industry integrated from raw material to final product and with its ability to provide engineering skill to countries that need it.

Fuels may be described as having four distinct though overlapping functions — provision of direct-heat energy; provision of electric power, so far, by indirect conversion; provision of motive power; and provision of source materials for partial or total chemical conversion. An approximate energy-use balance in Canada has been drawn up, demonstrating the relative impact made by the principal fuels, as shown in Table 13.1.

13.2.1 Petroleum and natural gas

The need to provide new energy sources in Canada has given considerable impetus to the search for oil and gas, particularly in the frontier areas of the North. This aspect of the oil and gas industry, as well as other developments in the production of these products, is covered in Section 12.1.4 of the preceding Chapter.

The composition of the Canadian net supply and consumption of various petroleum products and natural gas is as indicated in Table 13.2.

Natural gas requirements are met almost entirely from domestic sources. In 1971 requirements totalled 1,288.0 MMMcf of which imports supplied 14.4 MMMcf. The market for Canadian-produced natural gas was divided between domestic demand (1,292.0 MMMcf) and exports to the United States (910.8 MMMcf). The United States has been increasingly deficient in domestic supply of natural gas and hence there is a growing market for Canadian gas in that country. Sufficient reserves must be set aside to meet future Canadian requirements prior to export approval. On the basis of this policy, an export application in 1971 was rejected because reserves available at the time were insufficient to meet the new requirement.

In the case of petroleum products, Canadian demand for crude oil was met almost equally from domestic and from import sources. This division of the Canadian market between imported and domestic crude oil results from the "National Oil Policy" of 1961 whereby the Canadian market west of the arbitrarily drawn "Ottawa Valley Line" (essentially west of Quebec) is supplied from domestic sources while the market east of the line relies on imports from foreign sources. Canadian crude oil prices have traditionally been higher than those from foreign sources and it has therefore not been economic to supply Montreal and the Maritimes from western Canada. Exports of Canadian crude oil go to the United States. There is a direct link between the Alberta and Saskatchewan fields and the Chicago and other Great Lakes markets via the pipeline system of the Interprovincial Pipe Line Company and from Alberta and British Columbia fields via the Trans Mountain Pipeline system to refineries in the state of Washington. Western Canadian producers exported 273 million bbl of crude oil to these markets in 1971.

13.2.2 Petroleum refining and marketing

Petroleum refining, one of Canada's largest manufacturing industries, is concerned with the distillation and cracking of crude petroleum into a number of economically useful end-products such as motor gasoline, fuel oils, lubricating oils and greases, petrochemical feedstocks and asphalt.

The crude oil refining capacity of Canada's 40 refineries increased to 1,675,500 barrels per day (b/d) in 1971 (Table 13.3), an increase of 24% from 1970. Of this increase, some 12% was in the Atlantic Provinces, 9% in Quebec and 3.5% in the Prairie Provinces, while capacity in Ontario and British Columbia remained unchanged. Much of the increase in the Maritimes and Quebec is attributable to two large refineries, one at Point Tupper, NS and the other at St-Romuald, Que. The latter, with a capacity of 100,000 b/d, is the largest refinery ever built in Canada. Both refineries were designed to supply markets in the United States as well as Canada. The increased refining capacity in the Prairies was the result of one company replacing its smaller refineries with one much larger and more efficient.

During the year Canadian refineries operated at a rate of 1.39 million bbl of crude oil per day, an 8.6% increase over 1970 and representing approximately 83% of estimated capacity at the end of the year (Table 13.4). Refineries west of the Ottawa Valley Line, which, according to the National Oil Policy may use only Canadian crude oil, increased their consumption by 3.2%. Those east of the line, in Quebec and the Maritimes, relying on foreign crudes, increased their deliveries by 17% to 669,000 b/d. Much of this latter increase was again the result of the two new refineries. As a result of the increased refinery capacity, particularly in eastern Canada, refined product imports declined by some 46,000 b/d to 148,000 b/d.

The main source of crude oil imported into Quebec and the Maritimes was Venezuela which increased its exports to Canada by 11% to 406,000 b/d. Imports from the Middle East exceeded 156,000 b/d and Nigeria accounted for 66,000 b/d. The remaining major foreign source was Colombia which contributed 21,000 b/d.

Canadian exports of refined petroleum products increased by 41% to 100,000 b/d in 1971. A great part of this increase was due to a substantial growth in heavy fuel oil exports to the northeastern region of the United States. As already noted, the ability of refineries in Quebec and the Maritimes to serve a part of this important market has been substantially increased with the establishment of the two new large refineries at St-Romuald and Point Tupper. This capacity will be further increased by the 100,000-b/d refinery under construction at Come-By-Chance, Nfld, which is expected to begin operations in 1973.

The production of Canadian oil refineries was predominantly fuel oils and motor gasoline (the former accounted for 52% of refinery output and the latter for approximately 33%). The remaining output was divided among such other products as aviation gasoline and turbo fuel (3.4%), liquefied petroleum gases (4.3%), petrochemical feedstocks (2.1%) and asphalt (3%).

13.2.3 Natural gas processing and marketing

In contrast with petroleum refining, which involves the distillation of crude oil into a variety of fuels, natural gas processing involves the removal of impurities and by-products from the desired fuel. In addition, while petroleum refineries have, for economic reasons, been traditionally located close to their consuming markets and have tended to be large relative to these markets, natural gas processing plants are located near sources of supply and are designed in terms of the nature and size of the field sources. Thus, while in 1971 there were but 40 petroleum refineries in Canada, all located close to, or with easy access to the major markets, there were some 163 gas processing plants of which 146 were located in Alberta, seven in Saskatchewan, five in British Columbia, four in Ontario and one in the Northwest Territories.

Marketed or processed natural gas consists chiefly of methane with small amounts of other combustible hydrocarbons such as ethane and propane. Processing is necessary since raw natural gas may vary widely in composition. Thus, in addition to the usually predominant methane, there may be varying proportions of ethane, propane, butane and pentane plus. Another normal constituent is water vapour. While hydrogen sulphide is not present in all natural gas there is sufficient to provide an important source of sulphur as a by-product of natural gas processing. Other non-hydrocarbon gases which may be present, usually in small amounts, are carbon dioxide, nitrogen and helium.

Canadian natural gas processing capacity increased by 2,477 million cubic feet per day (MMcf/d) in 1971, the greatest annual increase in the history of the industry. This increase was mainly attributable to the completion of five large new plants and major expansion of three existing plants. Gas processing capacity was 13,000 MMcf/d by the end of the year. Processing capacity included 105,792 b/d for propane, 57,319 b/d for butane and 189,439 b/d for pentane plus. Total residue gas capacity was 10,956 MMcf/d, of which 10,406 MMcf/d was available for commercial consumption. Although a major expansion of processing capacity is under way in northern British Columbia, most gas processing capacity is concentrated in Alberta. At the end of 1971, Alberta accounted for more than 88% of the gas processing capacity, 99% of the liquid recovery capacity and 98% of the sulphur recovery capacity in Canada.

Sales of gas to Canadian consumers rose by 9.1% in 1971 to 2,743 MMcf/d. This compares with an 8.8% increase recorded the previous year. Imports of gas from the United States were at the rate of 39 MMcf/d (1.4% of consumption) while exports to the United States were at the rate of 2,495 MMcf/d, approximately equal to the rate of Canadian consumption. This export figure represented a 16.8% increase over the comparable figure for 1970.

Approximately two thirds of the increased Canadian consumption in 1971 was accounted for by industrial users whose demand rose 11% to 1,489 MMcf/d (approximately 54% of total gas sales in Canada). Demand for commercial consumption also rose by 11% to 567 MMcf/d, about 21% of total Canadian sales, while residential consumption increased by 4% to 687 MMcf/d (25% of Canadian sales).

About two thirds of the increase in Canadian sales in 1971 resulted from increased consumption in Ontario. Sales in that province rose 13.2% to 1,259 MMcf/d, nearly 46% of Canadian consumption. In Alberta, the second largest consuming province, the increase was 68% to 681 MMcf/d which was about 25% of all Canadian consumption in 1971.

13.2.4 Pipelines

Oil. There were 40 oil pipeline companies operating in Canada at the end of 1971. Principal statistics of movements of oil through these lines appear in Table 13.5. The prime components of the network of Canadian oil pipelines are the trunks of the Interprovincial Pipe Line Company and the Trans Mountain Pipe Line Company Ltd. which carry the bulk of domestic crude oil west of the Ottawa Valley. Refineries not relying on these systems are those located in oil-producing regions such as Calgary and Edmonton. The Interprovincial system carries crude oil eastward from Edmonton, receiving and discharging oil at various locations along its length. The Trans Mountain system operates similarly westward from Edmonton. Supplying these two trunk lines are pipeline systems funnelling oil from hundreds of fields into storage tanks at the pipeline terminals. Some of these feeder lines are impressive in themselves, not only in size of pipe and in length of route but in the volume of oil that they transport. Most of the feeder lines are, as might be expected, in Alberta, because of the predominance of that province in oil production.

The main pipeline terminal at Edmonton has ten crude oil feeder lines, varying in length from Interprovincial's 32-mile extension to Redwater to the 1,240-mile line of Peace River Oil. Other companies forming part of this important collector system, with their total length, daily capacity, and direction in relation to Edmonton are the following: Canadian Industrial Gas and Oil, 82 miles, 15,000 bbl, running southeast; Federated, 647 miles, 281,000 bbl, from the northwest; Great Canadian Oil Sands, 266 miles, 50,000 bbl, north-northeast; Gulf Alberta, 410 miles, 73,000 bbl, south-southeast; Imperial, 378 miles, 72,000 bbl, southwest; Pembina, 931 miles, 180,000 bbl, west-southwest; Rainbow, 692 miles, 225,000 bbl, northwest; and Texaco Exploration Canada, 173 miles, 130,000 bbl, south.

In addition, three pipelines are connected to the Interprovincial at Hardisty, some 100 miles southeast of Edmonton. Here, Gibson Petroleum Company Ltd. delivers up to 15,000 b/d of oil from fields just south of the pipeline terminal. Husky Pipeline Ltd. operates a multiple-line system in which one line is used to transport condensate from Hardisty to mix with the heavy asphaltic crude found at Lloydminster. The condensate-crude blend is returned to Hardisty through eight- and ten-inch lines having a total capacity of 77,000 b/d. The third pipeline connection, Bow River Pipe Lines Ltd. with a capacity of 34,000 b/d, carries crude from the most southerly oilfields in Alberta, near Taber. Home Oil Company Limited operates a pipeline serving refineries in the Calgary area with oil from fields north of the city; the line also has connections with the Rangeland pipeline which, in turn, is linked to the Texaco line going north to Edmonton.

Trans Mountain has a second receiving terminal in Alberta at Edson where the Peace River pipeline makes deliveries to Trans Mountain from fields to the north. In British Columbia, Westcoast Petroleum Ltd. carries crude over a distance of 500 miles from fields near Fort St. John in the northeastern part of the province to the Trans Mountain pipeline at Kamloops; this line has a capacity of 66,500 b/d.

Four main pipeline systems carry crude oil from Saskatchewan fields to the Interprovincial pipeline. Largest of these is the Westspur Pipe Line Company - Producers Pipelines Ltd. network, with a capacity of 175,000 b/d, which delivers crude from the important southeast Saskatchewan producing area to the Interprovincial terminal at Cromer, Man., and also carries crude delivered to it by Trans-Prairie Pipelines, Ltd. from fields in the Midale area of southeast Saskatchewan. In 1970, a twin line 100 miles in length was built for Murphy Oil Company Ltd. from Lone Rock in the Lloydminster field to Kerrobert, Sask. on the Interprovincial trunk line. A four-inch line carries condensate from the Interprovincial line at Kerrobert to Lone Rock where it is blended with heavy crude oil from the Lloydminster field to make it light enough for transport by pipeline. A 10-inch line then returns the blend to the Kerrobert pumping station where it enters the Interprovincial main line for transport east. The South Sask. Pipe Line Company, with a capacity of 115,000 b/d, takes medium-gravity crude from fields near Swift Current in southwest Saskatchewan to the Interprovincial pipeline at Regina. The fourth system is the Gulf Saskatchewan Pipe Line Limited, with a capacity of 10,000 b/d, which carries oil from the Coleville-Dodsland area to Interprovincial's terminal at Kerrobert.

The Manitoba System of Trans-Prairie Pipelines, Ltd. is the only pipeline in Manitoba serving the producing fields in the general area of Virden. It carries crude to the Interprovincial terminal at Cromer and has a capacity of 27,000 b/d.

Interprovincial Pipe Line Company's system is Canada's longest oil pipeline. It incorporates a wholly owned subsidiary in the United States, Lakehead Pipe Line Company Incorporated, and has a right-of-way length of 2,747 miles including a 95-mile lateral to Buffalo, New York. In 1971, 81 miles of 20-inch loop, in two sections, were added to its main line between Sarnia and the Welland Canal. Additional pumping units added in 1971 increased mainline capacity of the system to 1,308,000 b/d out of Cromer, Man.

Interprovincial serves 51 refineries; three at Edmonton; one at Lloydminster via the Husky pipeline; one at Moose Jaw via B-A Saskatchewan pipeline from Stony Beach; two at Regina; two at Winnipeg via Winnipeg pipeline from Gretna; 35 in the United States either directly or through connecting carriers; three at Sarnia; two at Oakville; one at Clarkson; and one at Port Credit.

The system of Trans Mountain Pipe Line Company Ltd. extends from Edmonton to Vancouver via Jasper and has a right-of-way length of 780 miles, including a section of 57 miles in the United States which belongs to a wholly owned subsidiary of Trans Mountain.

Trans Mountain serves nine refineries; one at Kamloops; four at Vancouver and four in the Puget Sound region of Washington State. Under a contract with Gulf Oil Canada Limited, facilities were completed at the Vancouver terminal to handle storage and transfer of liquid propane from railway tank cars to refrigerated Japanese tankers. First loading under the ten-year contract was made in October 1966 and, in 1971, 3,620,000 bbl were delivered to tankers.

The Montreal refinery centre is served by a 236-mile pipeline which is a joint system of Montreal Pipe Line Company Limited and its wholly owned subsidiary in the United States, Portland Pipe Line Corporation. This line takes delivery of tanker-borne crude from Venezuela, the Middle East and Africa at Portland, Maine. In 1965, the company completed a 24-inch pipeline paralleling the existing 18-inch and 24-inch crude oil lines. An additional 24-inch line under the St. Lawrence River was completed in 1967 to serve refineries in Montreal and, at the same time, 16- and 20-inch lines were installed for future use. Present capacity of the system is 536,000 b/d. Operating statistics of oil pipelines are given in Table 13.6.

Product pipelines. Traditionally, a product pipeline carries refined products from oil refineries to truck terminals in large consuming centres. However, with the growth of natural gas processing in Canada resulting in large volumes of liquid hydrocarbons such as propane, butane and pentanes plus being produced, a new type of line has emerged to bring these products to markets or to refineries.

Three product lines in eastern Canada supply markets in Ontario with refined petroleum products. Two of these, Sun-Canadian Pipe Line Company Limited and Sarnia Products Pipe Line, run from refineries at Sarnia to bulk plants in London, Hamilton and Toronto. Trans-Northern Pipe Line Company, once a pipeline carrying products from Montreal to markets in Ontario as far west as Hamilton, now has a two-way flow. Products from Montreal are delivered only in the area east of Brockville, including the Ottawa Valley; products from refineries west of Toronto are carried eastward as far as Kingston.

In western Canada, the Petroleum Transmission Company pipeline carries propane, butane and pentanes plus from a plant at Empress, Alta. to Winnipeg, Man., a distance of 578 miles. The predominant product carried is propane which is also marketed at various locations along the line. Elsewhere in Alberta the Rimbey Pipe Line Co. Ltd. transports condensate from the Rimbey gas plant and takes deliveries from the Rangeland condensate pipeline to serve areas north of Calgary as far as Edmonton. Also going to Edmonton from the Leduc gas conservation plant are three pipelines owned by Nisku Products Pipe Lines Company Limited, one each for propane, butane and pentanes plus. Near Calgary, Home Oil Company Limited operates a condensate pipeline to serve refineries there and also to make deliveries to the Rangeland condensate pipeline. In 1969, a 186-mile, 8- to 12-inch pipeline was built by Dome Petroleum Limited to transport mixed natural gas liquids from the Alberta Natural Gas Company Limited's new gas reprocessing plant at Cochrane to Interprovincial's Edmonton terminal. The liquids are transported to plants at Superior, Wisconsin, and Sarnia, Ont., where they are fractionated into propane, butane and other products for use in the surrounding market areas. Other condensate pipelines in Alberta are associated primarily with production and do not serve end-users.

In western Canada the new pattern of product distribution established by Gulf when they began to reorganize their manufacturing and marketing operations in 1969 is now being followed by Imperial Oil Limited which began to change its petroleum product supply system early in 1972. New product terminals will be built at major Prairie centres and supplied from a large new Edmonton refinery through existing pipeline systems. The principal distributor of the products produced by the new large Edmonton refineries will be Interprovincial which has converted its original 20-inch crude oil line out of Edmonton exclusively to products and gas liquids transportation. Another integral component of Gulf's product transportation system is its 193-mile, 10-inch line from Edmonton southward to terminals in Red Deer and Calgary, constructed in 1970.

Pipeline tariffs. The tariffs charged by oil pipeline carriers are subject to over-all regulation by the National Energy Board. Typical of the rates from Edmonton in effect at the end of 1972 were the following: to Vancouver, over a distance of 718 miles, 40.0¢ per barrel; to Regina, 438 miles, 20.7¢; to Winnipeg, 847 miles, 32.7¢; to Sarnia, 1,743 miles, 48.0¢; and to Port Credit,

1,899 miles, 51.0¢ per barrel. The rate for crude imported to the Montreal refinery complex through the 236-mile pipeline from Portland, Maine, is 11.0¢ per barrel.

Natural gas pipelines. The authorization of large-volume gas removal from British Columbia and Alberta, beginning in the mid-1950s, led to the development of the first major gas transmission pipelines in Canada. These major lines provided the framework for development of the extensive pipeline network now serving most centres of population from Vancouver to Montreal; gas is pumped through the system for export at seven points along the Canada - United States border. Planning is under way to extend major transmission lines northward into areas not now served to transport gas from the Canadian Arctic islands and the Prudhoe Bay area of Alaska to southern markets. Three groups of companies have put forward proposals for such pipelines and substantial sums are being spent on research to assess the technical problems and environmental effects of pipeline construction in the North. To assist companies in these initial planning phases, the federal government issued a set of guidelines outlining the criteria which must be met to protect the native people and the northern environment during construction and operation of the pipelines.

Pipelines are usually categorized under three headings — gathering lines, transmission lines and distribution lines. Gathering lines take gas from producing wells or treatment plants to the field gate or some other delivery point. Transmission lines normally receive gas from gathering lines and transport it through large-diameter pipelines to distributors for delivery to the ultimate consumer. At the end of 1971, a total of 62,860 miles of pipeline were in operation of which 7,166 miles were gathering, 20,601 miles were transmission and 35,093 miles were distribution.

Unlike oil pipeline companies which are common carriers transporting oil for a fixed charge, gas pipeline companies, with few exceptions, own the gas they transport. The principal and very important exception is The Alberta Gas Trunk Line Company which delivers virtually all of the gas exported from Alberta, where most Canadian gas reserves are located, to the main transmission companies at the provincial boundary. The Alberta Gas Trunk system contains 3,493 miles of pipeline.

Some details of the main transmission systems are contained in the following paragraphs. Two gas trunk lines serve Canada: the TransCanada PipeLines Limited system and the Westcoast Transmission Company Limited.

The TransCanada pipeline, originating at the Alberta border near Burstall, Sask., follows a route eastward to a point near Winnipeg, where it branches into two lines. One continues eastward into Ontario through Thunder Bay, then arches through the clay belt before swinging south via North Bay to Toronto, where one branch goes westward and another follows the shore of Lake Ontario and the St. Lawrence River to Montreal and the United States border. A number of lateral lines extend from the main transmission line to serve communities along the route. The second line from Winnipeg goes south to the United States boundary at Emerson where it connects with the Great Lakes Gas Transmission Company system, jointly owned by TransCanada and an American company. This pipeline follows a route south of Lake Superior through the Straits of Mackinac and east of Lake Michigan to reconnect with the TransCanada system at Sarnia, Ont. The TransCanada system is Canada's longest pipeline, having a total length of 4,007 miles including loop lines. The maximum daily gas delivery through the system in 1971 was 2,803,000 Mcf. Export sales averaged 754,400 Mcf daily.

The Westcoast Transmission Company Limited pipeline originates at the Beaver River field on the Yukon - British Columbia border, extends southeastward through the Fort Nelson and Fort St. John areas and follows a route through the British Columbia interior to Vancouver and the United States border at Sumac, BC. A number of lateral lines gather gas supplies from fields in northeastern British Columbia and western Alberta, and the system was extended north to the Pointed Mountain field in the Northwest Territories in 1972. Total pipeline in the Westcoast system exceeded 2,000 miles in 1971.

Although the Alberta Natural Gas pipeline is only 107 miles long, it forms a vital link in a major gas export chain which carries Canadian gas as far south as California. The pipeline connects with The Alberta Gas Trunk Line Company pipeline at Crowsnest Pass on the Alberta border, crosses southeastern British Columbia to the international border near Kingsgate and connects with the Pacific Gas Transmission Company system, which transports the gas in the United States.

Among the many other natural gas pipeline systems operating in Canada, some are devoted exclusively to gathering gas in producing fields, while others distribute gas received from main transmission lines to gas customers. Several large systems combine elements of gathering, transmission and distribution. Among the larger systems, Inland Natural Gas Co. Ltd. distributes gas to a number of centres in interior and southern British Columbia. In west-central British Columbia, the pipeline of Pacific Northern Gas Ltd. serves communities and industries along a 435-mile route between the Westcoast main line at Prince George and the Pacific Coast cities of Prince Rupert and Kitimat. Canadian Western Natural Gas Company Limited and Northwestern Utilities Limited serve markets in central and southern Alberta with a total of more than 8,654 miles of pipeline. Saskatchewan Power Corporation delivers all gas sold in Saskatchewan through a 6,846-mile transmission and distribution system serving most of the populated areas of the province. Northern and Central Gas Corporation Limited operates probably the most geographically widespread distribution system in Canada serving industries and communities adjacent to the TransCanada system from Winnipeg as far east as the Montreal area. Two large utility companies serve the highly populated and industrialized areas of southern Ontario. The Consumers' Gas Company operates in the Toronto area, the Niagara peninsula and eastern Ontario while Union Gas Limited serves the southwestern corner of the province. These are only some of the many gas pipeline systems that make up a growing network of lines serving domestic, commercial and industrial customers in all provinces except Prince Edward Island, Nova Scotia and Newfoundland.

More detailed information on throughput in the Canadian gas pipeline system appears in Table 13.7.

13.2.5 Coal

In 1971, coal used as a primary energy source for thermal electric power generation in Canada totalled 17.3 million tons, up from 15.2 million tons in 1970. This proved to be a slight decrease (from 72.4% to 69.5%) in the rapidly growing total Canadian thermal electric power. In the Prairie Provinces, low rank coal can be economically strip-mined and has become a prime source of electrical energy. Ontario, the prime user of thermal coal, used some 11% more bituminous coal (virtually all imported from the United States) in 1971 than in 1970. Relatively small quantities of coal are used for thermal power generation in Nova Scotia and New Brunswick. All other uses, such as for railways, ships' bunkers and for manufacturing plants, continued to decline.

The production and export of metallurgical coal continued to rise. In 1971, export of coking coal to Japan increased to 7.4 million tons from 4.1 million tons in 1970 and this amount is expected to continue to grow. Domestic consumption of imported coking coal decreased to 7.3 million tons from approximately 8 million tons in 1970; this decline is expected to reverse in the future as the demand for steel grows. Production of synthetic fluid fuels from cheaply mined coals is technically feasible and may become viable in the future. Developments in the coal processing industry are dealt with in Section 12.1.5 of the preceding chapter.

13.2.6 Uranium

Canada's proven uranium reserves (about 20% of the world's reserves outside USSR, Eastern Europe and China) should be ample to meet the domestic requirements into the 21st century. With its relatively large reserves and committed production facilities, Canada must look to export markets for uranium especially in the short term, to maintain a viable industry to meet her own requirements in the future.

In 1971 continued world overproduction of uranium and intense competition combined to force uranium prices to an all-time low. The year 1972 saw some improvement in the situation. In November 1972, Denison and Uranium Canada Ltd. confirmed a sales agreement valued at nearly \$60 million, involving 45,000 tons of U_3O_8 . The uranium will be delivered to a group of Spanish utilities over the period 1974 to 1977. The scale was made even before the Canadian government - Denison joint venture stockpile was accumulated and will completely dispose of this stockpile plus part of the government's general stockpile. This development brought total Canadian uranium commitments made since 1966 to over 73,000 tons U_3O_8 of which about 9,500 tons had been delivered by year-end.

Although the uranium industry suffers in the near-term from oversupply, the long-term outlook remains bright as orders for nuclear generating capacity continue to increase

throughout the world. The projected growth of nuclear capacity in electrical output to 1990 is estimated in Table 13.8. Although its share will decrease from 70% to about 50%, the US will probably remain the dominant consumer of uranium, followed by Western Europe and Japan; Canada's share will remain small. By 1990, annual requirements of these countries could reach 220,000 tons of U_3O_8 and cumulative demand to 2 million tons. It seems clear that prospecting and exploration must be accelerated if a shortage of low-cost uranium is not to develop in the 1980s. However, the trend seems to be in the opposite direction. In Canada, exploration has all but ceased, presumably because of the poor short-term market situation with prices of uranium at an all-time low, but should the current low level of exploration persist, there could be a period of uranium under-supply in the 1980s.

13.3 Electric power

13.3.1 Electric power development

While most of the fossil fuels (coal, oil and gas) are extensively employed in a direct form to provide energy, a significant portion is converted into a secondary form of energy, electricity. In the case of coal, more than half of Canada's energy in this form is converted to electricity. Two other primary energy resources, hydraulic energy and uranium, are almost exclusively employed after conversion to electricity. The reasons for employing this energy conversion, and for the sustained growth in electrical energy use in Canada since the beginning of the century, are principally the ease with which energy in the electrical form can be distributed, the flexibility of control and the efficiency of conversion to mechanical power, light, heat and the other end uses. From a modest 133,000 kilowatts of generating capacity installed at the end of 1900, Canada's installed hydro capacity rose to 30,601,000 kw by the end of 1971 and thermal capacity to 16,077,000 kw (Table 13.9).

Thermal-electric power development in Canada was not well documented early in the century but its growth was slow and of relatively minor importance until the late 1940s. The rate of development of hydro facilities, on the other hand, accelerated after the turn of the century when improvements in electric power transmission techniques were introduced and increasing emphasis began to be placed on the construction of large hydro-electric stations.

During the prosperous 1920s demand for electricity became heavier and the rate of installation increased appreciably. Then, in the depressed conditions of the early 1930s, power demand dropped off but this did not show up immediately as a drop in the installation rate because of the time lag inherent in hydro-electric power development. The completion of hydro projects initiated prior to the depression period accounted for the continuation of high rate of capacity installations up until 1935; thereafter, poor economic conditions in the 1935-39 period resulted in a reduced rate.

In the early war years, the tremendous demand for power for Canada's war industries accounted for the sharp rise in installation of new generating facilities between 1940 and 1943, but in the later war years construction dropped off so that, from 1944 to 1947, a second flattening occurred in the growth curve. After the war, industrial expansion and rapidly growing residential and agricultural development placed extremely heavy demands on power generating facilities. To stay abreast of these demands required the installation of new capacity at a rate higher than at any time in Canada's history. This increased demand also led to the start of an extensive program of thermal plant construction in the early 1950s, since hydro sources alone could not possibly satisfy requirements. In 1956, thermal generation represented 15% of installed capacity. Since then, the annual installed capacity has averaged 56% hydro-electric and the remainder in thermal generation. At the beginning of 1972 thermal generation accounted for 34% of Canada's installed capacity.

13.3.2 Current trends

Although water power traditionally has been and still is the main source of electrical energy in Canada, thermal sources will undoubtedly become the main supplier in the future. The choice between development of a hydro-electric power site and construction of a thermal generating station must take into account a number of complex considerations, the most important of which are economic in nature. In the case of a hydro-electric project, the heavy capital costs involved in construction are offset by maintenance and operating costs considerably lower than those for a thermal plant. The long life of a hydro plant and the dependability and flexibility of operation in meeting varying loads are added advantages. Also

important is the fact that water is a renewable resource. The thermal station on the other hand can be located close to the demand area, with a consequent saving in transmission costs. However, with the current trend to large steam stations a certain amount of the flexibility of location of thermal stations is lost because such units require considerable quantities of water for cooling purposes, making it essential that they be sited close to an adequate water supply.

The marked trend to thermal development which became apparent in the 1950s can be explained in part by the fact that most of the hydro-electric sites in many parts of Canada within economic transmission distance of load centres had been developed by that time and planners had to turn to other sources of electrical energy. More recently, however, advances in extra-high-voltage transmission techniques have provided a renewed impetus to the development of hydro power sites once considered too remote.

Thermal power generation may use fossil fuels or nuclear fuels as the source of energy. The fossil fuels — coal, gas or oil — can be obtained economically from domestic sources in some parts of Canada. In other regions the cost of transportation leads to the use of imported fossil fuels. Nuclear fuels are providing an increasingly important source of energy for thermal power plants and will be especially attractive for regions where fossil fuel costs are relatively high and where the power system permits the use of very large generating units which show the best economic advantage for nuclear plants. The CANDU reactor system, which provides the heat source for Canadian nuclear plants, allows the use of natural uranium mined and processed in Canada.

Because of the relatively long starting-up time required by large thermal units, such stations tend to lack flexibility of operation and can be used most efficiently to meet continuous load conditions. Hydro stations, on the other hand, can put generating units on line with minimum delay and hence are admirably suited to supply power to meet peak loads which may occur several times each day. This applies mainly to hydro plants located close to load centres where peaking operation does not involve substantial extra transmission costs. By combining the advantages of both hydro and thermal stations in integrated supply systems power producers are now achieving much greater flexibility of operation.

Another development trend designed to meet the problem of varying daily loads is the use of pumped storage. An example is the Sir Adam Beck hydro development at Niagara Falls where water taken from the Niagara River above the Falls is carried by tunnel and power canal to penstocks which supply the main generating station on the bank of the Niagara River some distance below the Falls. In off-peak hours, power from the main station is used to pump water from the power canal into a reservoir maintained at a higher level; during peak-load hours, the dual-purpose pumps operate as generators and are driven by water released from the reservoir. The pumping-generating units at this development make available an extra 176,700 kw of generating capacity. A pumping-generating station using the same general principle has been constructed on the Brazeau River in Alberta as part of the 305,500-kw Big Bend hydro development.

Perhaps the most promising application of the pumping-generating principle is its use in conjunction with nuclear power stations. Nuclear units, in common with the larger conventional thermal units, can be used most efficiently under conditions of continuous operation. Off-peak nuclear power can be used to operate pump-turbine units and the hydro-electric power derived from operating the units as generators is available for use during periods of peak demand.

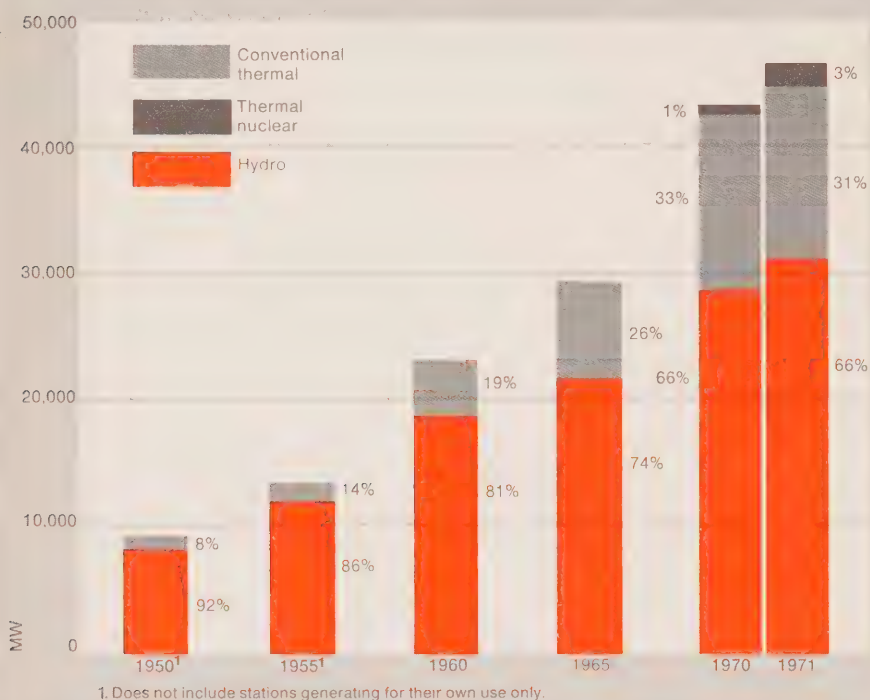
Details of research activities now being carried on into the many aspects of electric power generation and distribution in the broad sense may be found in Chapter 9.

13.3.3 Utilization of electrical energy

In 1971, Canada's generating facilities produced 215,064 million kilowatt-hours of electrical energy, after allowing for the energy used in the power stations themselves. Of this total, 74.6% was produced in hydro-electric stations and the remainder in thermal stations. Electric power exported to the United States exceeded imports by 3,737 million kwh during 1971, so that the total energy available in Canada amounted to 211,327 million kwh.

As indicated in Table 13.10, total electrical energy consumed in Canada during 1971, after deducting about 8% for losses, was divided among commercial users (15%), domestic and farm consumption (21%) and industrial loads (56%). The energy distribution for this latter group can be subdivided approximately as follows: one third to the mineral industry (including smelting

Installed generating capacity in Canada, 1950-71



and refining), one quarter to the pulp and paper industry, one tenth to chemical manufacturing and the remaining portion to all other industrial categories. The availability of electrical energy, at reasonable cost, is an important element in Canada's industrial growth.

For a few industries the cost of electric power is a key element in economic competitiveness. For most industries, however, electrical energy is but one of many cost elements which influence the opportunities for expansion. The assurance of a reliable supply of electrical energy, the availability of assured supplies to meet the needs of growing demand without delay, and attention to the many other factors influencing industrial development will normally be a more effective element in industrial growth than one which assumes that "low cost power" is an essential or sole ingredient for success.

Over the past two decades, the portion of the country's total electrical energy consumed by industry has dropped appreciably (from 67% in 1950 to 56% in 1971) while consumption by other sectors has risen significantly. This is not to say that there has been an actual decline in industrial demand, but rather that industrial expansion has been less energy-intensive and there has been a more rapid growth by the other users. Domestic and farm consumption has shown the highest increase, from 13% of the total in 1950 to 21% in 1971. Commercial consumption has also risen noticeably, from only 11% in 1950 to 15% in 1971. The growth among non-industrial customers results from a greater reliance by Canada's population on facilities powered by electricity. Tremendous quantities of electrical energy are required, for example, to meet rapidly escalating demands for heating, cooling, lighting, transportation, elevators, electrical appliances and farm machinery. The shift of population from rural areas to cities and towns, where electrical demand is greatest, has also been a contributing factor to this growth.

Details of the provincial pattern of electrical energy use can be seen in Table 13.11. Of total energy made available in Canada during 1971 more than two thirds was consumed in

Ontario and Quebec with the remaining one third shared by all other regions. The share of total consumption by these other regions has, however, been rising (combined total of 26% in 1960 compared to 33% in 1971) while it has been declining in Quebec (40% in 1960 as against 33% in 1971) and has remained constant in Ontario at 34%. In all parts of Canada industrial users have been and still are the prime consumers. The actual portion of total energy consumed by industry in 1971, for instance, ranged from a high of 64% in British Columbia, which includes the energy used in both the Yukon and Northwest Territories, to a low of 47% in the Prairie region. Domestic and farm consumption remains greatest in the Prairie Provinces and Ontario but for somewhat different reasons. In Ontario, where the majority of people are urban dwellers, it is the high demand from the large cities that accounts for the higher level, while in the Prairies it results from a substantial farming load combined with a normal level of domestic usage.

Part of Canada's growing need for electric power reflects a growth in population but in addition the consumption per capita increased in 1971 by 4.2% to 9,800 kwh per capita. Since 1960 consumption per capita in Canada has risen by more than 60%. The Atlantic Provinces experienced the largest increase, 154% to 6,600 kwh per capita, followed closely by the Prairie Provinces with 132% to 7,200 kwh. The lowest increase over the period was in Quebec with only a 36% rise to 11,700 kwh per capita but the level was already very high. British Columbia recorded the highest per capita consumption in 1971, 12,800 kwh. Table 13.12 sets out details of this per capita consumption by region.

Electrical energy generated in Canada during the year was equivalent to 52.7% of the amount which in theory could be generated if the total installed capacity at the end of 1971 were operating continuously. The balance reflects fluctuations in load below peak demand during daily and seasonal cycles together with reserves of generating capacity.

13.3.4 Hydro-electric power generation

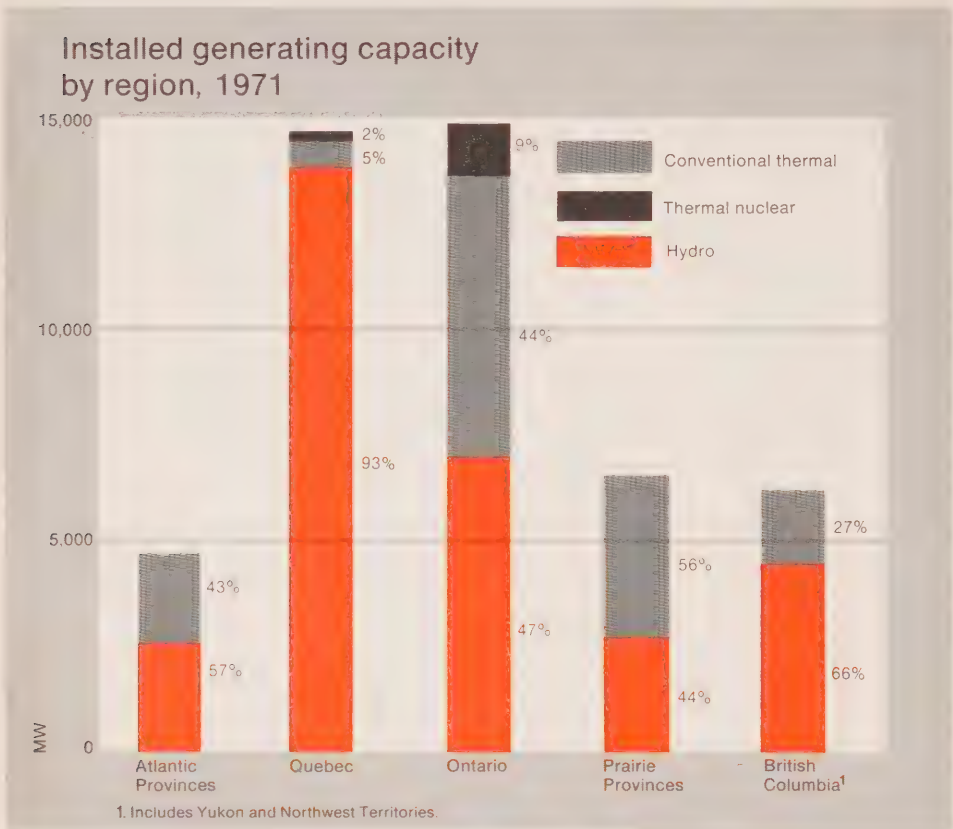
As discussed in Section 13.3.2, hydro-electric generation will play a decreasing, yet significant role in Canada's future electrical development. By the beginning of 1972, the hydro portion of the country's total generating capacity had fallen to 66% from over 90% twenty years earlier.

In view of the vast water resources existing throughout Canada, there would appear to be many undeveloped sites that could be potential sources of hydro-electric power. It is not sufficient, however, to assume that all of these possibilities represent economically viable sources of electric power. In fact, only a very minor portion of the sites with a theoretical power potential can actually be developed competitively. Before a site can be termed a source of potential power, a detailed analysis of such factors as costs, geography, geology and ecology must be performed. Until a study is completed on a national scale, estimates of Canada's undeveloped water power resources may tend to be misleading; a recent estimate places them in excess of 60 million kw.

Figures of water power resources already developed are given in Table 13.9 and are based on the manufacturer's rate in kilowatts as shown on the generator name-plate, or derived from the rating where it is indicated in kilovolt-amperes. The maximum economic installation at a power site can be determined only by careful consideration of all the conditions and circumstances pertinent to its individual development. It is normal practice to install units having a combined capacity in excess of the available continuous power at Q50 (flow available 50% of the time), and frequently in excess of the power available at Qm (arithmetical mean flow). There are a number of reasons for this. The excess capacity may be installed for use at peak-load periods, to take advantage of periods of high flow, or to facilitate plant or system maintenance. In some instances, storage dams have been built subsequent to initial development to smooth out fluctuations in river flows. In other cases, deficiencies in power output during periods of low flow have been offset by auxiliary power supplied from thermal plants, or by interconnection with other plants which operate under different load conditions or are located on rivers with different flow characteristics.

The extent to which the installed capacity exceeds the available continuous power at the various rates of flow is dependent upon the factors that govern the system of plant operation, and varies widely in different areas of the country.

The provincial and territorial distribution of installed hydro-electric generating capacity given in Table 13.9 reveals that substantial amounts of water power have been developed in all



provinces except Prince Edward Island. As natural resource development proceeds, the fortunate incidence of water power in proximity to mineral, forest and other resources becomes increasingly apparent. The existence of large amounts of potential hydro power on northern rivers may well prove to be a factor of prime importance in the eventual realization of the natural wealth of the Canadian North.

The water power resources of Nova Scotia and New Brunswick, although small in comparison with those of other provinces, are a valuable source of energy and make a substantial contribution to the economies of the two provinces. Numerous rivers in both provinces provide moderate-size power sites either within economic transmission distance of the principal cities and towns or advantageously situated for use in development of the timber and mineral resources. These provinces have, however, turned to coal-fired thermal generation and are increasingly utilizing oil.

13.3.5 Thermal power generation

The incidence of immense water power resources in Canada and the brisk pace of their development has tended to overshadow the very considerable contribution being made by thermal energy in the nation's power economy. At the end of 1971, the total installed thermal capacity in Canada was 16,077,000 kw, representing about 34% of the total electric generating capacity in the country. The fact that energy produced in thermal plants during the year accounted for only 25% of the total may be attributed in part to the fact that a considerable amount of the capacity installed is operated for peak-load duty, with hydro-electric capacity providing base-load generation. This pattern will change with the introduction of additional nuclear-fuelled thermal generation plants which can be operated economically at high capacity factors for base-load purposes.

Conventional thermal power. Over 90% of all thermal power generating equipment in Canada is driven by steam turbines. The magnitude of loads carried by steam plants combined with the economies of scale has led to the installation of steam units with capacities as high as 540,000 kw, and units in the 800,000-kw size range have been committed for as early as 1975. Additions of these larger units are, however, only possible where systems are large enough to accommodate them. Additional types of thermal generation are provided by gas turbine and internal combustion equipment. The flexibility of internal combustion engines makes this type of equipment particularly suitable for meeting power loads in smaller centres, especially in the more isolated areas. Gas turbines are frequently used for peak loads where their rapid start-up ability is an advantage.

Table 13.9 shows that thermal generation is predominant in Prince Edward Island and Nova Scotia. By the end of 1971, the Yukon Territory had joined the Northwest Territories, Alberta, Saskatchewan, Ontario and New Brunswick in having greater than one half of their total capacity thermal-electric. It is expected that thermal generation will become increasingly predominant in Ontario. Although coal is still the most important fossil fuel for thermal plants in Nova Scotia, oil is rapidly becoming the preferred choice for thermal power generation in all of the Atlantic Provinces.

Nuclear thermal power. Commercial electric power generated from the heat of nuclear reaction became a reality in Canada in 1962 when the 20,000-kilowatt electrical (kwe) Nuclear Power Demonstration station at Rolphton, Ont., fed power for the first time into a distribution system in Ontario. The NPD station is the forerunner in a series of large nuclear stations that will shoulder more and more of Canada's rapidly growing power loads.

Research into reactor design and the application of nuclear energy in the electric power field are among the more important responsibilities of Atomic Energy of Canada Limited, a Crown company incorporated in 1952 (see also Chapter 9). AECL has concentrated its efforts on the development of the CANDU reactor which uses natural uranium as a fuel and heavy water as the moderator. By using heavy water as the moderator, a high energy yield can be obtained from natural uranium and, since natural uranium is a low-cost nuclear fuel, the cost of fuel is a minor component in the cost of producing power. Natural uranium has the added attraction of being available in commercial quantities in Canada.

The NPD station has been used extensively to demonstrate the ability of the system to operate at a high capacity factor and to determine the nature and predictability of outages. Fuel changes while the system is in operation have become routine and a considerable amount of research into the sources of heavy-water losses has been carried out. As a result of this research, losses have been cut down and the NPD station is demonstrating that a very acceptable heavy-water loss rate is attainable. The station was modified in 1968 to a boiling heavy-water mode of operation to provide additional demonstration capabilities.

At Douglas Point on the shore of Lake Huron, the country's first full-scale nuclear power station went into commercial production in 1967. The station, built with the co-operation of Ontario Hydro, houses a 220,000-kwe CANDU reactor. Experience gained in the design and operation of this reactor has encouraged the development of even larger units. Construction of the four-unit, 2,160,000-kwe Pickering nuclear station is well advanced near Toronto, with two of the station's four units coming on line ahead of schedule during 1971; units 3 and 4 were expected to go into service in 1972 and 1973. Work on the Bruce nuclear station for Ontario Hydro is proceeding with four 800,000-kwe units planned for installation from 1975 to 1978.

A further step in the development of the CANDU reactor is the use of boiling light water instead of pressurized heavy water as the coolant. Quebec's Gentilly nuclear station near Trois-Rivières utilizes boiling light water in its CANDU reactor. This station came into service in 1971 with 250,000 kwe of nuclear-electric capacity.

13.3.6 Electric power transmission

The nature of the loads handled by small, widely scattered generating systems in the early days of the electric power industry in Canada did not warrant the expense of interconnecting power systems. However, as the demand for dependable electric power increased and improved techniques reduced power transmission costs, the benefits of integrating power systems to achieve reliability of service and flexibility of operation were re-appraised. Today, most of Canada's generating stations are components of large, integrated and often interconnected power systems operated by power utilities and companies in the various provinces.

Constant research in the field of power transmission has developed techniques that enable power producers to utilize hydro-electric sites previously considered beyond economic transmission distances. Most noticeable, perhaps, is the progressive stepping-up of transmission-line voltages. In Canada, there are a number of transmission lines designed for operation at 500,000 volts and 735,000 volts. A 574-mile, 500,000-volt line is in service to carry power from the Peace River to the lower mainland of British Columbia. In Ontario, a 435-mile, 500,000-volt line carries power from hydro-electric plants in the James Bay watershed to Toronto. In 1965, Hydro-Quebec achieved world leadership when power was carried for the first time at 735,000 volts over the 375-mile transmission line between Quebec's Manicouagan - Outardes hydro complex and the cities of Quebec and Montreal. By the end of 1971, the initial program for 1,228 miles of the 735,000-volt line had been completed. Work also finished on the first of three additional 735,000-volt circuits to connect the Churchill Falls complex with the Hydro-Quebec grid.

Most power is transmitted as alternating current but three applications of high-voltage direct-current (HVDC) are found in Canada. In service in British Columbia is a 260,000-volt HVDC link from the mainland to Vancouver Island. It has a capacity of 312,000 kw and includes 21 miles of undersea cable; it is a monopolar system using the ground as the return path for current. A second HVDC system is expected to be placed in service in 1973 linking the Kettle generation station on the Nelson River to Winnipeg where two 555-mile lines have been completed and converter equipment is now being installed. The initial capacity is 810,000 kw and the planned ultimate rating is 3,200,000 kw. Another application is designed to provide a non-synchronous tie between the systems of New Brunswick and Quebec; this is a 320,000-kw back-to-back HVDC system located at Eel River, NB, which was placed in service in 1972 employing solid state thyristor valves in place of the mercury arc valves used for the earlier HVDC systems.

Interconnections of from 66,000 to 230,000 volts exist between British Columbia and Alberta, Saskatchewan, Manitoba, Ontario and portions of the Quebec system are interconnected and, through the Ontario Hydro system, are linked with the northeastern United States systems. Quebec, New Brunswick and Nova Scotia systems are interconnected. The first international tie connecting regions of the Maritimes in Canada with the United States became a reality during 1970 on completion of a 345,000-volt link between the New Brunswick and Maine systems. British Columbia has an international tie with the Pacific Northwest (500,000 volts) and a 230,000-volt link between Manitoba and the United States was completed during 1970.

The search for economies in transmission systems has led to changes not only in materials used but also in tower erection and cable-stringing methods. Guyed V-shaped and Y-shaped transmission towers are being used increasingly in place of self-supporting towers where the terrain is suitable, and erection costs are being reduced by the use of helicopters to transport tower sections to the site for assembly. The use of helicopters for spraying for brush control on the right-of-way and for line inspection and maintenance is wide-spread.

In addition to considering the economics of transmission development, a concerted effort is under way to provide systems that are acceptable aesthetically. For example, designing more attractive towers led to the development of new tapered aluminum poles which will ultimately replace their unsightly wooden counterparts. Discretion is also being exercised in the selection of routes for proposed lines to ensure only minimal disturbance of the natural landscape.

13.3.7 Developments in 1971

Net additions of 3,862,000 kw to electrical generating capacity in 1971 raised Canada's total installed capacity by 9% to 46,678,000 kw. Reversing the 1970 growth pattern where thermal additions predominated, hydro-electric capacity accounted for 2,308,000 kw or nearly 60% of all 1971 installations. The 1,554,000 kw of thermal capacity added provided only 40% of the 1971 total compared to 1,810,000 kw or 59% of the total in the previous year. With the installation of the first two 540,000-kw units at Ontario Hydro's Pickering station and the commissioning of the 250,000-kw Gentilly station by Hydro-Quebec during the year, the country's nuclear generating capability rose an unprecedented 554% to 1,570,000 kw (from 240,000 in 1970). In fact, nuclear additions provided more than 85% of the over-all thermal-electric installations made in 1971. As at December 31, 1971, total installed capacity was approximately 66% hydro-electric, 31% conventional thermal and 3% thermal nuclear.

The trend to larger unit sizes which has been evident in the past few years continued in 1971. Of the 1,554,000 kw of thermal capacity installed, 1,480,000 kw or 95% was contributed by units of 150,000 kw or greater. In hydro-electric additions, where size is largely affected by hydraulic conditions, there were 1,812,000 kw or nearly 80% in units of the 150,000-kw, or greater, size range.

Although the 4,500,000 kw of new capacity predicted to be placed into service during 1971 were not attained, the 3,862,000 kw which were installed established an all-time high for capacity additions in a single year. The previous record of 3,840,000 kw was set in 1969. In 1970 less than 3,100,000 kw of new generating capacity were added.

Electrical energy generated in Canada in 1971 increased by 5.7% to 216,472 gigawatt hours (gwh) (million kilowatt hours). Exports of energy to the United States rose appreciably (30% over 1970) to 7,321 gwh or slightly more than 3% of total generation. With 3,378 gwh of energy being imported from the US, net exports at year-end stood at 3,943 gwh (58% above the 1970 net export). The actual growth of primary and secondary energy supplied within Canada, therefore, was up only 5.0% to 211,271 gwh. The 5.0% increase is substantially below the 6.7% average growth rate for the 1961-71 period.

In 1971, energy generation from thermal units continued to show the more substantial increase — 15.2%, compared with a modest 2.6% rise in hydro generation. A significant rise was experienced in steam generation, both nuclear (312%) and conventional (10%), while there was a considerable decrease in internal combustion (–5%) and gas turbine (–29%) generation. The share of total energy supplied by hydro-electric facilities fell from 76.7% (156,276 gwh) in 1970 to 74.6% (160,412 gwh) in 1971.

The portion of energy generated by electric utilities during the year was approximately 85%, up from about 84% in 1970; such a growth pattern will likely continue. The only provinces where industrial power generation still plays a significant role are British Columbia and Quebec, with 41% and 21%, respectively, of the total electricity in those provinces being generated by industry. In Manitoba and Prince Edward Island all major power generation comes from electric utilities.

13.3.8 Generating capability and load requirements

Power generating *capability* is the measurement of the available generating resources of all hydro and thermal facilities at the time of the one-hour firm peak load for each reporting company, and is not equal to the *capacity* of such generating facilities. For example, a hydro plant may have a capacity of 100,000 kw but if, at the time of peak load, the water available for generation is only 80% of the plant capacity requirements, then its capability is 80,000 kw.

Total generating capability has grown at a rapid rate especially in the past few decades. The annual rate of increase was 7.0% in the period 1961-71 and 9.3% in the period 1967-71. In comparison, the forecast rate of growth for the years 1972-76 is 7.3%; thermal generating capability is expected to grow at an average rate of 10.7% a year in the forecast period compared with 13.3% in the period 1961-71, and hydro-electric capability is expected to increase at 5.3% a year compared with 4.4% in the 1961-71 period. This rate of growth in hydro generating capability in the forecast period is attributable to the large power projects under construction in relatively remote areas that will be completed within the next few years. More specific information can be found in Table 13.13.

Among the provinces, Ontario has the largest generating capability, followed by Quebec, British Columbia and Alberta. Quebec has the largest hydro-electric generating capability, followed by Ontario and British Columbia, but Ontario has the largest thermal capability, followed by Alberta and British Columbia. The first full-scale nuclear power station went into commercial operation in Ontario in early 1967.

The largest absolute growth in generating capability for the forecast years is indicated for Ontario at 6,889,000 kw, followed by Newfoundland at 3,666,000 kw, British Columbia at 2,835,000 kw and Quebec at 1,327,000 kw. Ontario will meet most of its increased generating capability by adding 2,835,000 kw in thermal capability and 60,000 kw in hydro capability, the former including 60,000 kw nuclear. Newfoundland will add 3,663,000 kw hydro and 3,000 kw thermal, and British Columbia 2,493,000 kw hydro and 342,000 kw thermal.

Firm power peak load is the measure of the maximum average net kilowatt demand of one-hour duration from all loads, including commercial, residential, farm and industrial consumers as well as the line losses. Such load demand increased at the rate of 6.9% a year from 1961 to 1971 and 6.5% a year from 1967 to 1971; peak-load demand is forecast to increase at the

average rate of 7.3% a year in the period 1971-76. As a result of the rapid increase in generating capability and the somewhat slower but steady increase in the peak loads, together with the slight reduction in deliveries of firm power to the United States, the indicated reserve on net capability in the 1961-71 period increased each year except 1961, 1963, 1964 and 1966. Increases are forecast for each year from 1971 to 1976. The reserve ratio as a percentage of firm power peak load reached a high of 28.2% in 1960 and fell to 13.7% in 1968 but is expected to increase to 24.2% in 1976. Absolute figures are given in Table 13.14.

13.3.9 Electrical utilities

Federal government regulation of electrical utilities with respect to the export of electric power and the construction of lines over which such power is exported falls within the jurisdiction of the National Energy Board.

Power is generated in Canada by publicly and privately operated utilities and by industrial establishments. Over 75% of the total electric power generated in 1971 was produced by publicly operated utilities, 10% by privately operated utilities and 15% by industrial establishments. However, ownership varies greatly in different areas of the country. Although Quebec power installations were at one time privately owned, almost all were transferred to public ownership in 1963. In Ontario almost all electric power has been produced by a publicly owned utility for over 60 years.

Because the determination of market prices and regulation of services is limited to inter-fuel competition with oil, gas and coal, some regulation of electrical utilities has been attempted in all provinces. In most of them the generation and main transmission of power is the responsibility of a provincial Crown corporation. Investor-owned electrical utilities are predominant in Alberta and play a significant role in Newfoundland, Prince Edward Island, Ontario and British Columbia; they contribute about 10% of the total power generated in each province. Generating facilities in industrial establishments represented 11.4% of installed capacity at the end of 1971 and generated 15.0% of the electrical energy produced during the year. There is an annual decline in industrial generation as it becomes increasingly attractive to purchase power from utilities, which can take fuller advantage of larger unit sizes and operational flexibility. Even when process steam is required for an industrial operation, there are instances when it is advantageous to purchase both steam and power from the electrical utility.

Newfoundland. The Newfoundland and Labrador Power Commission was established in 1954 to supply power wherever needed throughout the province. The Commission began large-scale production of electrical energy in 1967 when the Bay d'Espoir plant began operating and the provincial transmission grid was established. Power is supplied from this grid to several industries direct and to investor-owned electric distribution companies for distribution. The Newfoundland Light and Power Company is the principal distributor. Bowater Power Company Limited supplies the Bowater Newfoundland Pulp and Paper Mills Limited and several large mining operations. Electricity is provided to isolated areas through Rural Electricity Authority and Power Distribution Districts, principally through diesel generator sets. In Labrador, the Churchill Falls (Labrador) Corporation, a subsidiary of Brinco, is engaged in the development of the massive Churchill Falls power project which commenced production in 1972. This company also controls the Twin Falls Power Corporation which serves iron ore mining centres in western Labrador.

The water-power resources of this province are very substantial. On the island, although the rivers are generally not long, topography and run-off favour hydro-electric power development; of the substantial capacity installed, a very large portion serves the pulp and paper industry.

In Labrador, the Churchill River and its tributaries, now under development, constitute one of the largest potential sources of water power in Canada. An important milestone was passed during 1971 at the massive Churchill Falls complex in Labrador with installation of the first two 475,000-kw hydro-electric units. First power was delivered to Hydro-Quebec over the first of three 735-kv transmission lines late in the year. Although the complex was originally scheduled for completion in 1976, the construction program is being accelerated and it is now expected that the project will be completed by the end of 1975. At that time, Churchill Falls will be by far the largest generating station in Canada and, indeed, one of the largest in the world.

Thermal capacity in Newfoundland had, until recently, consisted of small internal combustion stations serving more isolated communities, together with a few medium-sized gas turbine and steam turbine units in larger centres. The province's first major thermal station, the 300,000-kw oil-fired steam generating plant at Holyrood, was completed during 1971 with installation of the second 150,000-kw unit. Located a few miles outside St. John's, Holyrood now provides almost 70% of the province's total thermal generating capability and, in fact, is second only in rated capacity to the Bay d'Espoir hydro-electric station on the Salmon River. With more than 450,000 kw of new capacity installed on the island in the 1970-71 period, neither of the province's major utilities, the Newfoundland and Labrador Power Commission and the Newfoundland Light and Power Company, anticipates any additions for at least the next two to three years.

A major problem facing the Newfoundland and Labrador Power Commission has been the distance separating the rapidly expanding industrial load on the west coast and the major source of power generation at Bay d'Espoir. However, work is expected to begin soon on a second 230-kv line to connect Bay d'Espoir with the Bottom Brook substation near Stephenville. Completion of various sections of this line are set for 1973, 1976 and 1978. The only additions to the island's transmission network during 1971 were made to the 66-kv and 230-kv systems and were very minor in nature.

Prince Edward Island. The absence of any large streams in the province has led to an almost total dependence on thermal-power generation except for a few plants used to operate small mills. The Maritime Electric Company, Limited provides direct service to customers in Charlottetown and in the towns, villages and rural areas of the province with the exception of Summerside, where a municipal electric department serves customers with power purchased from the Company while the town's 6,900-kw diesel plant is on stand-by.

Addition of a new 14,000-kw gas turbine unit at Borden during 1971 increased the province's total generating capacity by 18%. About 14 miles of 138-kv transmission line were erected to connect the Borden plant with the existing 69-kv transmission system at Summerside.

Sharp increases in electric power rates were experienced in PEI during the year as a result of an 80% increase in the price of bunker "C" fuel used in the 70,500-kw Charlottetown steam plant which provides more than three quarters of the province's generating capacity. Renewed consideration is now being given by Maritime Electric to the economic and operational advantages of a cable interconnection to the mainland which was studied several years ago by the Atlantic Development Board but not implemented when construction of a planned causeway to the mainland was rejected. The company supplied 274,909,536 kwh to all customers in 1972 for an increase of 12% over 1971 and had an installed capacity of 84,500 kw.

Nova Scotia. The self-supporting Nova Scotia Power Commission, with total assets of \$395 million, is one of the province's largest industries. It was created by Act of the provincial legislature in 1919 to develop the limited but useful hydro potential of the province, and to control exploitation of its rivers. Its first objective was to develop remote hydro sites to supply low-cost energy to new industries, particularly pulp and paper, and to a few centres of population. In 1937 this emphasis was changed when the Rural Electrification Act made it possible, through equalization grants, to bring power to low-density farm and rural village areas.

Throughout the 1960s, the Commission acquired a number of small electric utilities, and in 1972 it purchased the Nova Scotia Light and Power Company Limited. The Commission and its subsidiaries employ about 2,200 full-time personnel to serve some 250,000 customers. As at December 31, 1972, the Commission had a total installed capacity of 958,000 kw in 32 hydro and seven thermal stations. About 75% of this capacity is, however, in the thermal stations, with hydro furnishing the balance. Most of the province's economic hydro potential has been exploited. Vast energy potential exists at several sites on the Bay of Fundy and studies are now under way to determine the economic feasibility of using this tidal power. Except for such developments, future expansion in Nova Scotia will be concentrated on expanded thermal generating facilities. Firm commitments include a 100,000-kw addition to the Tuft's Cove plant scheduled to go into service in 1972 and a 150,000-kw unit addition to the Point Tupper station which should be on line by the end of 1973. Although definite plans have not yet been completed, most new capacity to be added beyond 1973 will probably be centred

around the Point Tupper station; smaller gas turbines will be used for security and peaking in more isolated areas.

The 43,000 kw of new generating capacity added during 1971 came from an 18,000-kw oil/wood-fired unit installed at the Port Hawkesbury station of Nova Scotia Forest Industries and from a 25,000-kw gas turbine unit commissioned by the Nova Scotia Power Commission at Tusket, near Yarmouth. Installed primarily to handle peak loads, this unit will also provide additional security to the power system in the western end of the province. A 3,000-kw steam plant at Sydney Steel Corporation Ltd. was removed from service in 1971.

The Nova Scotia transmission network was extended by about 100 circuit miles during 1971. Construction is under way on a second major line, due for completion by 1973, linking the Canso Strait area to Sydney.

New Brunswick. The New Brunswick Electric Power Commission was incorporated under the Electric Power Act of 1920. It has maintained a steady growth pattern since 1969. Power generation has risen from 4,196,000,000 kwh in 1970 to 4,748,000,000 kwh in 1971 and 5,894,000,000 kwh in 1972 for a corresponding capital investment of \$389.5, \$405.1 and \$452.4 million.

Generating stations owned by the Commission at December 31, 1972 were: Grand Falls (hydro) 63,000 kw; Tobique (hydro) 20,000 kw; Beechwood (hydro) 115,000 kw; Milltown (hydro) 3,900 kw; Sisson (hydro) 10,000 kw; Courtenay Bay (steam) 263,365 kw; Grand Lake (steam) 98,750 kw; Saint John (steam) 16,000 kw; Chatham (steam) 32,500 kw; Grand Manan (diesel) 2,811 kw; Mactaquac (hydro) 400,000 kw; and Dalhousie (steam) 100,000 kw. The total installed capacity was 1,150,326 kw.

With the exception of Grand Manan, these generating units are interconnected in a province-wide grid system. High-capacity interconnections with neighbouring utility systems in Quebec, Nova Scotia and New England are also available. System load increases during the early part of this decade are being met with base-load power purchased from Hydro-Quebec and with peaking power from hydraulic stations on the Saint John River system in addition to existing thermal stations.

New Brunswick's installed generating capacity was increased by 25,000 kw during 1971 when a new gas turbine peaking unit at Moncton was commissioned. The province's system was further expanded in April 1972 when the fourth 100,000-kw unit at the Mactaquac hydro-electric station was brought on line. Two additional 100,000-kw units to be added later at Mactaquac will bring the plant's over-all capacity to 600,000 kw. Studies are under way to determine the optimum timing for these remaining two units.

A new oil-fired thermal generating station is being constructed at Coleson Cove near Lorneville in the Greater Saint John area. Although the station will consist initially of two 300,000-kw steam units, a third unit of similar size may be added later. The first two units are expected to be brought on line in 1975 and 1976 when the present agreement to purchase power from Hydro-Quebec terminates. A new source of power will be urgently required at that time.

A unit participation agreement to provide for the export of 400,000 kw of Coleson Cove's 600,000 kw to the United States has been submitted to the National Energy Board for approval.

The possibility of developing additional storages on the Saint John River and of increasing the installed capacity at Grand Falls is being reviewed. Nuclear generation in New Brunswick within the next decade is also a definite possibility.

Quebec. The richest of all provinces in water power resources, Quebec possesses about 40% of the total for Canada; and leads in developed water power with installations of 13,766,000 kw in 1971, representing about 45% of the national total. Power production in the province is facilitated by the regulation of stream flow through storage dams owned and operated by the Department of Natural Resources. Some responsibility for regulation rests with the Quebec Hydro-Electric Commission.

The Quebec Streams Commission created in 1910 was authorized to ascertain the water resources of the province, to make recommendations regarding their control and to construct and operate certain storage dams to regulate the flow of streams. In 1955, the Commission was abolished and its functions transferred to the Hydraulic Resources Department, now the Department of Natural Resources. The rivers controlled by the Commission either by means

of dams on the rivers or by regulating the outflow of lakes at the headwaters, were: the St. Maurice, the Gatineau, the Lièvre, the St. Francis, the Chicoutimi, the Au Sable and the Métis. The Commission also operated nine reservoirs on the North River, two in the watershed of the Ste. Anne de Beaupré River and one at the outlet of Lake Morin on Rivière du Loup. Eleven auxiliary reservoirs on the St. Maurice system and two on the Gatineau were turned over by the Department of Natural Resources in 1965 to the Quebec Hydro-Electric Commission for operation and maintenance. Other storage reservoirs include: the Lake St. John, the Lake Manouane and Passe Dangereuse on the Peribonca River, the Onatchiway on the Shipshaw River and Lake Memphremagog on the Magog River, all under private control; and Témiscamingue and Quinze Lakes on the Ottawa River controlled by the federal Department of Public Works. Storage reservoirs controlled by Hydro-Quebec include: Témiscouata Lake on the Madawaska River, Kipawa Lake and Lac Dozois on the Ottawa River, Lac Cassé in the Bersimis River watershed and Lac-Ste-Anne on the Toulouste River, a tributary of the Manicouagan.

The abundance of Quebec's water-power wealth, much of it in reasonable proximity to existing demand areas, has limited the application of thermal power to specific local use. With new developments in transmission technology allowing economic long-distance transportation of large blocks of power, it seems likely that Quebec will continue to concentrate on hydro-electric power and to develop some of the more remote rivers such as those flowing into James Bay. Nevertheless, the province is beginning to look toward thermal power since it will serve not only to help guarantee an adequate power supply in the face of increasingly heavy demands but also to render the almost exclusively hydro-electric base more flexible through integrated operation. Quebec's largest conventional thermal plant, the Tracy station near Sorel, has an installed capacity of 600,000 kw.

The total thermal capacity of the province increased by more than 30% during 1971. The commissioning of the new 250,000-kw Gentilly nuclear station, located on the south side of the St. Lawrence River a few miles downstream from Trois-Rivières, was largely responsible for this sizable increase. Although the station is currently owned by Atomic Energy of Canada Limited, Hydro-Quebec holds an option to purchase the facility when it becomes fully operational. The success in bringing Gentilly on line is of particular interest since it marks the first time in Canada that a nuclear plant using natural uranium as fuel, and ordinary light water for cooling, has produced electric power. All other Canadian nuclear developments use heavy water for cooling. The only other noteworthy thermal addition in the province during 1971 was a 3,000-kw internal combustion unit installed at the Cap-aux-Meules station on the Magdalen Islands. The over-all capacity of this station now stands at just under 15,000 kw.

With the installation of the final three 161,500-kw hydro-electric units at Manic 5, Hydro-Quebec completed the fifth of seven planned developments on the Manicouagan - Outardes river system. When all seven plants are operational they will have a total combined capacity of 5,500,000 kw, of which 3,880,000 kw have thus far been attained. Manic 5, boasting a capacity of 1,292,000 kw, is the largest plant in the complex and the second largest in the province. The Beauharnois development on the St. Lawrence River remains the largest in the Quebec system with a total capacity of more than 1,574,000 kw.

Although not located within the boundaries of the province, the Churchill Falls development in Labrador represents a new and very important source of energy for Quebec. By the end of 1971, two of the projected eleven 475,000-kw units were operational and delivering power to Hydro-Quebec. The Churchill Falls complex is expected to attain full capacity (5,225,000 kw) by the end of 1975 and most of its output will be fed into the Quebec system under a 65-year contract with the developers, Churchill Falls (Labrador) Corporation.

The Quebec Hydro-Electric Commission was established in 1944 (SQ 1944, c.22) to supply power to municipalities, industry, commercial ventures and the general public at the lowest rates consistent with sound financial administration. On May 1, 1963, the Commission acquired control of the following privately owned electrical utilities operating in the province: Shawinigan Water and Power Company, St. Maurice Power Corporation, Quebec Power Company, Southern Canada Power Company, Gatineau Power Company, Northern Quebec Power Company, Saguenay Electric Company, and Lower St. Lawrence Power Company. As a result of these acquisitions, all electricity production, except for facilities operated by certain industrial organizations in their own manufacturing operations, was brought under the control

of a single authority. The Commission now services virtually the entire province except for local distribution of small amounts of electricity by some municipalities, most of it purchased from the Commission or its subsidiaries.

At the end of 1971, Hydro-Quebec and its subsidiaries operated 53 hydro-electric stations with a capacity of 10,439,761 kw and 16 thermal-electric stations with a capacity of 666,949 kw, for a total capacity in operation of 11,106,710 kw to provide a balanced distribution of power throughout the province.

As at December 31, 1971, Hydro-Quebec employed 12,245 persons to serve 1,895,488 customers. Capital expenditures increased from \$291.1 million in 1970 to \$387.6 million in 1971, while the value of plant and properties at cost rose to \$4,662.1 million in 1971 as compared with \$4,287.7 million one year earlier. Available power increased from 51,058 million kwh in 1969 to 56,166 million in 1970 and again to 58,334 million in 1971. Peak system load in 1971 reached 9,173,000 kw, an increase of 3.3% over the preceding year.

Most of the major planned additions to the power system in Quebec are hydro-electric. Next scheduled for service is a 36,600-kw addition to the Rapide-des-Îles plant in 1973 to be followed by the 1,176,000-kw Manic 3 development in 1975-76.

Considerable work took place during the year on the James Bay hydro-electric development. Under the direction of Hydro-Quebec and a number of other companies and consulting firms, approximately 1,300 men supported by 20 helicopters and 15 float-planes undertook a comprehensive survey of the area. Massive amounts of hydrologic, geographic, topographic and other data were needed to determine the feasibility of developing the region. In December, Hydro-Quebec and the James Bay Development Corporation received three reports dealing with the various development possibilities of the rivers flowing into James Bay from the Quebec side and the estimated cost of each. The five major rivers studied were the Nottaway, Broadback, Rupert, Eastmain and La Grande. Hydro-electric potential of the region is estimated at some 15,000,000 kw, roughly three times the size of the Churchill Falls complex.

Hydro-Quebec also carried out extensive investigations on a number of smaller sites during the year, including a study of the Chamouchouane River, where the potential exceeds 600,000 kw, and a study of the Moisie River whose potential could be as high as 1,800,000 kw if a small part of the Kaniapiskau River were diverted into it. Experimental work continued on the planned pumped-generating facility at St. Joachim on the St. Lawrence River near Quebec City. This station will eventually have a usable output of 3,700,000 kw in peak demand periods.

The principal achievement in transmission work in 1971 was the completion of the first of three 735-kv power lines linking the Churchill Falls complex with the Manicouagan and Micoua stations. Hydro-Quebec's 735-kv power line connects with the Churchill Falls transmission system at the Labrador border about 152 miles north of Sept-Îles. Approximately 700 miles of distribution lines were also installed to bring the total network to more than 43,000 circuit miles. Voltages on these lines range from 4 kv to 25 kv.

Ontario. Most of the electric power produced in the province comes from generators of The Hydro-Electric Power Commission of Ontario, Canada's largest power producing and distributing organization. The province's largest hydro-electric generating station is located on the Niagara River at Queenston, where the Sir Adam Beck - Niagara generating stations Nos. 1 and 2 and the associated pumping-generating station have a combined generating capacity of 1,814,950 kw.

Ontario has more thermal capacity than any other province in Canada; capacity installed at the beginning of 1972 was 7,984,000 kw, about 50% of the national total. Ontario Hydro's Lakeview station at Toronto is Canada's largest thermal generating station with an installed capacity of 2,430,000 kw. The Lambton station near Sarnia reached its designed capacity of 2,000,000 kw in 1970. Except for the oil-fired Lennox station now under construction, Ontario's fossil-fuelled thermal plants are designed to be coal-fired.

The Hydro-Electric Power Commission of Ontario is a corporate entity, a self-sustaining public enterprise given broad powers with respect to the supply of electricity throughout the province. Its authority was established by provincial legislation adopted in 1906 to give effect to recommendations that the water power of Ontario should be conserved and developed for the benefit of the people of the province. It now operates under The Power Commission Act (RSO 1970, c.354, as amended). The Commission may have from three to six members, all

appointed by the Lieutenant-Governor in Council. Two commissioners may be members of the Executive Council of the province.

The basic principle governing the financial operations of the Commission and its associated municipal utilities is that electrical service is provided at cost. The Commission interprets cost as including payments for power purchased, charges for operating and maintaining the power-supply facilities, and related fixed charges. The fixed charges represent interest on debt, provision for depreciation, allocations to reserves for contingencies and rate stabilization and provision for retirement of the Commission's capital debt on a sinking-fund basis. While the enterprise has been self-sustaining from the beginning, the province guarantees payment of principal and interest on all bonds issued by the Commission. In addition, the province has materially assisted the development of agriculture by contributing toward the capital cost of extending rural distribution facilities under the Hydro-Electric Distribution Act.

The East and West Systems, formerly separate operating entities, were fully integrated in 1970 and, although the capacity of the interconnection is a limiting factor in the exchange of power, the combined facilities now form a unified provincial network. For general day-to-day operations the province is still divided into seven regions, with regional offices located in major municipalities.

The primary concern of the Commission is the provision of electric power by generation or purchase to more than 350 electrical utilities for resale in municipalities having cost contracts with the Commission. The Commission also supplies power in bulk, although not under cost contract, to direct customers, mostly industrial customers whose requirements are so large or so unusual as to make service by local municipal utilities impracticable. These include mines, industries in unorganized territories, and certain interconnected systems.

In addition to these operations which represent about 90% of its energy sales the Commission delivers electric power to retail customers in rural areas and in a small group of 15 municipalities served by Commission-owned local distribution facilities. However, retail service is generally provided by municipal electrical utilities, owned and operated by local commissions, which supply ultimate customers in most cities and towns, in many villages, and in certain populous township areas. In addition to administering the enterprise over which it has direct control, the Commission, under The Power Commission Act and The Public Utilities Act, exercises certain regulatory functions, particularly with respect to the group of municipal electrical utilities it serves.

During 1971, the Commission's investment in fixed assets at cost increased by \$474 million and mounted to \$5,062 million at the end of the year. Total assets, after deducting accumulated depreciation, were \$5,064 million. In that year, 353 municipal electrical utilities, with net assets amounting to \$1,361 million of which \$553 million was equity acquired in the Commission's assets, purchased power under cost contracts from the Commission for retail distribution. Combined assets of the Commission and the municipal electrical utilities, after deduction of the municipal equity, increased by \$500 million to a total of \$5,872 million.

To meet power demands of the system at primary peak time, resources of the Commission in December 1971 included generating capacity of 6,257,600 kw at hydro-electric stations and 7,308,500 kw at thermal-electric stations. Power available under purchase contracts decreased by 10,900 kw to 375,000 kw. Service was provided directly or indirectly to 2,434,466 ultimate customers, and met a maximum primary demand of 11,534,528 kw. The maximum total of primary and secondary demand in December 1971 was 12,271,127 kw, 661,853 kw higher than that in 1970.

In addition to the province-wide Ontario Hydro system, a few investor-owned utilities provide service to customers in Cornwall, Fort Erie, Gananoque, and Sault Ste. Marie.

The net addition of approximately 1,300,000 kw (292,000 kw hydro and 990,500 kw thermal) to the Ontario Hydro system during 1971 gave the province a total generating capacity of 14,994,000 kw, the highest in Canada.

The only significant hydro-electric addition during 1971 was the commissioning of the 228,000-kw Lower Notch station on the Montreal River. The flooding of the forebay for this station necessitated salvage and demolition operations on two older hydro-electric generating stations located upstream; the 2,000-kw Fountain Falls plant and the 9,600-kw Upper Notch plant were removed from service during the early part of the year. Ontario Hydro announced plans during the latter part of 1971 to construct an 87,000-kw hydro-electric plant in two units

on the Madawaska River near Arnprior but construction was delayed pending solution of a number of problems. The station had been scheduled for completion in 1976.

Almost all sizable water-power sites in Ontario within easy reach of demand centres have now been developed but planners are studying more remote sources as improvements in long-distance transmission techniques may soon bring some of these sites within economic range. Meanwhile, expansion in the short term will all be thermal, whether conventional or nuclear.

The highlight of 1971 for Ontario Hydro came in April when the first of four 540,000-kw nuclear units was placed in service at the Pickering station east of Toronto. A second 540,000-kw unit went on line in October. Units 3 and 4 were scheduled to see service in 1972 and 1973, respectively. During 1972, three additional 7,500-kw gas turbine auxiliary units were expected to complement three similar units already installed at Pickering.

Employing the CANDU (Canadian Deuterium Uranium) system, which uses natural uranium fuel and a heavy-water moderator, the Pickering operation is being closely watched by energy producers the world over. It is the third and largest nuclear station to see service in Ontario; the 20,000-kw Nuclear Power Demonstration (NPD) plant at Rolphton was commissioned in 1962 followed by the 220,000-kw Douglas Point station in 1966. Ontario Hydro has co-operated closely with Atomic Energy of Canada Limited, the designer, in the building and operation of all three facilities.

Construction is proceeding on a fourth nuclear development, the 3,200,000-kw Bruce complex near Kincardine, and first power should be available by 1975; completion of the four-unit plant is scheduled for 1978. In conjunction with the generating station, a plant to produce the heavy water needed for the moderator is also being built.

In addition to the nuclear stations, construction is also under way on two large conventional steam generating plants. The first of two 500,000-kw coal-fired units at the Nanticoke station (near Port Dover) began to deliver power during 1972; another six units of similar size are scheduled to go on line between 1973 and 1977 (two of them in 1974), bringing the total capacity to 4,000,000 kw. The 2,295,000-kw oil-fired Lennox station being built west of Kingston is expected to have its first two units operative by 1975 with the final two coming on line in 1976 and 1977.

A sizable expansion of Ontario's transmission network was also accomplished during the year with about 900 circuit miles of transmission line and nearly 3,000,000 kilovolt-amperes of transformer capacity being installed.

Manitoba. Manitoba Hydro is the primary agency responsible for the generation and distribution of electric power in the province. The corporation was formed April 1, 1961, merging The Manitoba Power Commission, the provincial distributing agency created in 1919 to serve rural Manitoba, and The Manitoba Hydro-Electric Board, the power generating and development authority established in 1951.

Manitoba Hydro serves 254,263 consumers in some 700 communities throughout rural Manitoba and suburban Winnipeg. Electrical energy transmitted over 39,300 miles of Manitoba Hydro line totalled 9,900 million kwh. Manitoba Hydro operates nine hydro-electric stations, two thermal-electric stations and 26 isolated diesel plants with installed capacity totalling 2,235,258 kw. The nine hydro stations and two thermal stations, operated in conjunction with the City of Winnipeg Hydro Electric System's Pointe du Bois and Slave Falls stations, form the Manitoba Integrated System.

Pine Falls, McArthur, Seven Sisters and Great Falls hydro stations are on the Winnipeg River approximately 70 miles northeast of Winnipeg; Grand Rapids hydro station is on the Saskatchewan River 285 miles northwest of Winnipeg; and Kelsey and Kettle Rapids hydro stations are 400 and 450 miles northeast of Winnipeg on the Nelson River. Responsibility for operation of the Sherritt Gordon Mines Laurie River hydro stations 1 and 2 was assumed by Manitoba Hydro in May 1970. A power line 140 miles northwest from Thompson to Laurie River ensures that continuing growth in power requirements at Sherritt Gordon's mining properties and the town sites of Lynn Lake, Fox Lake and Leaf Rapids will be met.

Of the three Prairie Provinces, Manitoba, with immense hydro-electric capabilities on the Winnipeg, Churchill, Nelson and Saskatchewan rivers, is the most generously endowed with water power resources. Until recently, hydro-electric generating stations on the Winnipeg River supplied most of the power requirements of southern Manitoba. Manitoba Hydro's

high-voltage, long-distance transmission lines, however, will carry ever-increasing amounts of power south from hydro-electric stations on northern rivers to help meet the province's constantly growing power demands. Of particular interest is the initial development of the Nelson River system where Kettle Rapids, the latest site being developed, has five of a projected 12 generating units in service with a nominal rating of 102,000 kw per unit. The output of the Kettle station is being transmitted at ± 450 kilovolts to southern Manitoba via a 525-mile high-voltage direct-current (HVDC) transmission line and converted to alternating current at the Dorsey Converter Station 12 miles west of Winnipeg.

The 1971 expansion program in Manitoba continued to stress development of the province's abundant hydro-electric potential. Three 102,000-kw units were added to the Kettle generating station on the Nelson River bringing the plant's capacity at the end of that year to 408,000 kw. Eight units were to be added between 1972 and 1975 at a rate of two per year. Completion of the seventh and final unit (33,750 kw) at another Nelson River development, the Kelsey station, was also scheduled for 1972. This will bring the total capacity of Kelsey to more than 236,000 kw. The next project to be developed will be a 160,000-kw station at the Jenpeg site on the Upper Nelson River north of Lake Winnipeg. It is expected that these additions will be adequate to meet Manitoba's load requirements until the late 1970s. Thereafter, additional capacity will be obtained primarily from undeveloped power sites on both the Nelson and Burntwood rivers in the northern portion of the province.

Manitoba Hydro plans to apply for a licence to divert water from the Churchill River into the Nelson River via the Burntwood River. Such a diversion would not only increase the energy available from the Nelson but would permit development of a number of sites on the Burntwood River.

Thermal-electric expansion in Manitoba is currently restricted to the addition of numerous small internal combustion units in the northern reaches of the province. In aggregate, more than 4,200 kw of new diesel capacity were installed at various communities.

Substantial additions were made to the province's transmission and sub-transmission systems during the year. Atomic Energy of Canada completed two HVDC transmission lines between Radisson (near Kettle) and Dorsey (near Winnipeg). AECL is currently proceeding with 1,080,000 kw of HVDC conversion equipment. Future transmission plans call for a 230-kv line from La Vérendrye to St. Léon to service a rapidly growing industrial load in the south-central portion of the province. Both of these lines should be operational by 1973.

Saskatchewan. The Saskatchewan Power Corporation was established in 1949 by the Power Corporation Act (RSS 1965, c.40, as amended) as a successor to the Saskatchewan Power Commission which had been in operation since 1929. The original functions of the Corporation included the generation, transmission and distribution, sale and supply of electrical energy with the objective of making electricity available to all the people of the province, in abundance and at reasonable rates. Since 1952, the Corporation has also been authorized to produce or purchase and to transmit, distribute, sell and supply natural or manufactured gas.

In 1972, the Corporation served 126 communities with populations of 500 or more, about 875 smaller communities and 106 summer resorts. In addition, bulk power was supplied to Saskatoon, Swift Current and Battleford. A wholly owned subsidiary, North-Sask Electric Ltd., is responsible for providing and improving electrical service to communities in northern Saskatchewan.

At the end of December 1972 the Corporation provided electric service to approximately 277,500 customers, composed of 203,450 "urban" (an urban community is defined as one in which there are at least six customers) and 74,050 "rural" customers. Energy sales totalled 5,300 million kwh with industrial customers accounting for 45% and residential customers for 17% of the total. During 1972, a total of 5,900,000,000 kwh was supplied to the system, almost all of it generated in Corporation plants. In December, the provincial peak load reached a new high of 1,138,000 kw. The Saskatchewan Power Corporation owned and operated 5,450 miles of transmission lines of 72 kv and over and 72,541 miles of less than 72 kv (excluding urban distribution). At the end of 1972, the Corporation had invested, at cost, \$567.8 million in electrical system assets out of a total corporate plant-in-service investment of \$789.1 million.

Large water-power resources exist in the central and northern parts of Saskatchewan, principally on the Churchill, Fond du Lac, and Saskatchewan rivers. Power from Squaw

Rapids and Coteau Creek on the Saskatchewan River is now being fed into the transmission network serving the more settled areas of the province. Before completion of this development in 1963, these areas had been served by electric power produced almost exclusively in thermal plants fuelled by coal, oil or natural gas; hydro-electric power had been used almost exclusively for mining purposes in northern areas. Thermal generation will provide the next stage of expansion with extensions under way at the Boundary Dam (Estevan) and Queen Elizabeth (Saskatoon) stations. In 1972, hydro accounted for only some 40% of the electrical energy produced.

No new additions were made to Saskatchewan's generating facilities during 1971. A 100,000-kw thermal unit scheduled to be brought into service at the Queen Elizabeth station during the year was delayed but was brought on line in 1972. The only other expansion currently under way is a 150,000-kw coal-fired unit addition to the Boundary Dam station near Estevan. When completed in midsummer 1973, this plant will boast an over-all capacity of 582,000 kw, by far the largest in the province. The forecast additional needs will be met by the purchase of 100,000 kw from Manitoba Hydro under a one-year contract commencing November 1, 1972.

Alberta. Electric power generation in Alberta is provided by two major investor-owned companies and three municipal utilities. In addition, several other municipal systems handle local distribution of power purchased from the investor-owned utilities. Companies previously known as Canadian Utilities, Limited and Northland Utilities Limited merged their resources in 1972 into a single company known as Alberta Power Limited.

The Energy Resources Conservation Board regulates the construction and operation of the electric utilities under the Hydro and Electric Energy Act of the province of Alberta while the Public Utilities Board regulates the rates.

The installed capacity in the province as at December 31, 1972 was 2,771,000 kw, an increase of 10% over the 2,679,000 kw recorded a year earlier; total energy generated increased by 13% from 11,098,000 kwh in 1971 to 11,700,000 kwh in 1972. While 27% of the total generating capability of the province was in hydro sources in 1971, all but 11.6% of the total power generated came from conventional thermal plants with steam units providing 85% of that total.

In Alberta, most of the principal hydro-electric developments are located on the Bow River and its tributaries and, from these developments, Calgary Power Ltd. serves most of the southern part of the province. The Big Bend hydro-electric development on the Brazeau River in the headwaters of the North Saskatchewan River, completed in 1967, augmented the energy from the Bow River plants and the Bighorn development on that same river added 108,000 kw in 1972. Substantial water power resources are located in the northern regions and, although these are somewhat remote from present centres of population, the advent of extra-high-voltage transmission has enhanced the prospect of their development.

The availability of vast fossil-fuel resources accounts for the emphasis on thermal power generation in Alberta; the province's largest thermal plants are the 405,000-kw gas turbine and steam station at Edmonton and the 582,000-kw Wabamun steam station. Although no significant additions were made to the province's generating capacity during 1971, extensive expansion, particularly in relation to thermal generation, was either nearing completion or in the planning stage.

Alberta Power completed its 140,000-kw H.R. Milner coal-fired generating station near Grande Cache during the fall of 1972 and plans to add a fourth 150,000-kw unit to its Battle River plant near Forestburg. With the addition of this new unit in 1975, the Battle River plant will have an over-all capacity in excess of 365,000 kw. A second 165,000-kw unit presently being installed at Edmonton Power's Clover Bar station should be on line by 1973. The addition of a second 286,000-kw unit to Calgary Power's Sundance station (near Wabamun) in 1974 will make it the largest generating plant in Alberta (572,000 kw). Calgary Power has filed application with the Energy Resources Conservation Board of Alberta to install third and fourth units at Sundance. It is hoped that these two additional 375,000-kw units can be placed in service in 1976 and 1977, respectively. Should all these plans be realized, Alberta's thermal generating capability in 1977 will be more than 70% greater than at the end of 1971.

Calgary Power is the only one of Alberta's utilities planning expansion to the province's hydro-electric system. The 108,000-kw Bighorn station on the North Saskatchewan River was

completed by late fall 1972. The Bighorn power storage development is a multipurpose project undertaken jointly by Calgary Power Ltd. and the Alberta government. In addition to making more electric power available, the project will greatly assist the government's water management program by providing a better distribution of Alberta's water resources between the northern and southern sections of the province. It will also make diversion of part of the North Saskatchewan River into the Red Deer River system economically feasible. Extensive development of the area's recreational potential is being planned as well. A study of the potential of the Athabasca and Slave rivers by Calgary Power has revealed a possible 3,000,000-kw in undeveloped hydro-electric capacity. Financial considerations have, however, made these developments economically unattractive at the present time.

Alberta Power undertook a sizable expenditure during 1972 for high-voltage transmission lines in the Drumheller, Grande Prairie and Vegreville areas and existing transmission substations were upgraded to cope with the increased load.

British Columbia. In terms of installed hydro capacity, British Columbia is exceeded only by Ontario and Quebec. The province has many mountain rivers offering abundant opportunity for the development of hydro-electric power; notable for the magnitude of their power potential are such rivers as the Columbia, the Fraser, the Peace and the Stikine. Hydro developments on smaller rivers in the south once met the major load requirements of the province but in 1968 the immense power resources of the Peace River began to supplement the energy supply. Development of the hydro potential of the Canadian portion of the Columbia River is now under way, utilizing water from three huge storage dams, two of which have already been completed; the third, Mica Dam, which became operational in 1972 measures 800 ft from base to crest and is the largest earthfill dam in Canada.

The foremost producer and distributor of electric power in British Columbia is the British Columbia Hydro and Power Authority, a provincial Crown corporation. B C Hydro operates a diversified system of public utilities including transportation services by rail, sea and road. Electric power is generated, transmitted and distributed throughout areas of the province containing more than 90% of the population. Natural gas is purchased and distributed in Greater Vancouver and in the Fraser Valley, and liquefied petroleum gas in Greater Victoria.

Of B C Hydro's electric power requirements totalling 17,977,000,000 kwh for the year ended March 31, 1972, 16,221,000,000 or 90%, were produced by hydro-electric stations and 721,000,000 kwh (4%) by thermal plants; the remaining 1,035,000,000 kwh were purchased primarily from Canadian sources. Kilowatt-hours of electricity sold during 1971-72 (16,174,600,000) were 10.9% higher than during the previous year, with gains recorded for all categories of customers. Residential consumption increased 9.6%, commercial 11.0%, and industrial 12.3%. As at March 31, 1972, 726,000 customers were served with electricity, 36,000 more than during the previous year. Gross revenues from electrical services were \$211,425,389, up 9.6%. The average annual rate for residential customers remained at 1.9 cents per kilowatt-hour, and the average annual residential consumption increased from 6,949 kwh to 7,342 kwh. Installed nameplate generating capacity as at March 31, 1972 totalled 3,852,364 kw (2,813,922 kw hydro and 1,038,442 kw thermal generating capacity). The integrated system peak one-hour demand was 2,970,000 kw, 7.3% higher than the recorded peak in the fiscal year ended March 31, 1971.

Considerable circuit mileage was added to the transmission system in British Columbia during 1971 including a 100-mile 230-kv line connecting the East Kootenay region to the integrated grid system, a 53-mile 230-kv line between Kelly Lake (near Clinton) and a new substation at 100 Mile House, conversion of the 60-kv line to 138 kv in the Thompson River valley, and a 62-mile line between Nicola substation and the Similkameen Mining Company's new operation south of Princeton.

Although expansion in the immediate future will continue to concentrate heavily on the development of additional hydro-electric capacity, long-term plans call for substantial increases in thermal-electric generation as well. A total of 377,000 kw of new hydro-electric capacity was brought into service in 1971 and added to B C Hydro's system. A sixth 227,000-kw unit was installed at the Gordon M. Shrum station on the Peace River while redevelopment of the Jordan River station accounted for the remaining 150,000 kw. With the commissioning of this new unit at Jordan River, the four old units with a combined capacity of 26,400 kw were retired from service. The year 1972 should see the completion of one hydro-electric station, the

50,000-kw Whatshan plant on the Whatshan River, and the installation of units 7 and 8 (227,000 kw each) at the Gordon M. Shrum station. The contract has been awarded for a ninth 227,000-kw unit at the same plant to be on line by the fall of 1974. The Kootenay Canal project on the Kootenay River and the Mica Dam project on the Columbia River will provide another 50,000 kw (1975-77) and 1,740,000 kw (1976-77), respectively. It is anticipated that two additional 435,000-kw units will be installed at Mica Dam at a later date, bringing the plant's ultimate capacity to 2,610,000 kw.

About two thirds of British Columbia's thermal generating capacity is installed in three plants located in the Vancouver area. The capacity of the largest of these plants, the Burrard generating station, will be increased to 900,000 kw in 1974 with the addition of a sixth 150,000-kw unit.

Thermal-electric additions during 1971 were fairly minor with approximately 3,000 kw of new diesel capacity being added at various locations. With a number of stations being removed from service completely and the capacity being reduced substantially in others, there was a net loss of 21,000 kw from the province's total internal combustion capacity over the year. The more noticeable decreases included a 7,000-kw reduction in capacity at the Dawson Creek station (resulting capacity 13,000 kw) and the retirement of the 5,000-kw Chetwynd and 9,000-kw Prince George stations, all owned by B C Hydro.

Two new gas turbine stations are being planned: a single-unit 40,000-kw plant at Port Hardy in 1973 and a two-unit plant of 28,600-kw each at Prince Rupert in 1973-74. Provision has been made for added capacity at the Port Hardy plant in future years.

Yukon and Northwest Territories. The Northern Canada Power Commission, a Crown corporation established in 1948, operates under authority of the Northern Canada Power Commission Act (RSC 1970, c.N-21) which empowers it to survey utility requirements, construct, and operate public utility plants in the Northwest Territories, Yukon Territory and, subject to the approval of the Governor in Council, elsewhere in Canada. The Act requires that projects undertaken by the Commission be self-sustaining; consequently, rates charged for the utilities supplied must provide sufficient revenue to cover interest on investment, repayment of principal over a period of years, operating and maintenance expenses, and a contingency reserve.

A preliminary evaluation of hydro-electric potential has been made for most of the major rivers in the Yukon Territory and in the central portion of the Mackenzie District of the Northwest Territories. Results indicate that a very substantial water-power potential exists; the Yukon River and its tributaries alone represent some of the largest undeveloped hydro-electric resources in North America.

Until 1965, most of the power needs of the Northwest Territories were met from thermal sources but in that year commissioning of the Twin Gorges hydro station on the Taltson River altered the balance in favour of hydro. However, with several new additions over the 1970-71 period, thermal facilities once again became the dominant source of power. During 1971, thermal generation also became the larger contributor in the Yukon Territory. Most of the thermal-electric energy in the territories has been generated by small diesel units. Future growth will probably continue to concentrate on diesel generation but the units installed will be substantially greater in size.

The Northern Canada Power Commission has hydro-electric power developments on the Yukon River near Whitehorse and on the Mayo River near Mayo in the Yukon Territory; in the Northwest Territories, it has developments on the Snare River northwest of Yellowknife and on the Taltson River northeast of Fort Smith.

The 5,100-kw Mayo River hydro-electric development has supplied power to mining properties in the Elsa and Keno areas and to the communities of Mayo and Keno City since 1952. The Whitehorse Rapids power development (hydro capacity 19,000 kw), in service since 1958, supplies power to the Yukon Electrical Company for distribution in the city of Whitehorse and to a copper-mining operation located within a few miles of Whitehorse. The Company, an Alberta Power subsidiary, planned minor expansion of its generating and transmission facilities in 1972. A 225-mile transmission line completed in 1969 supplies Anvil Mining Corporation Limited's lead and zinc mine-mill complex at Faro in the Vangorda Creek area. A 9,000-kw peaking standby diesel-electric generating plant, adjacent to the hydro-electric plant at Whitehorse, was commissioned in December 1968, and an additional

5,000-kw diesel-electric plant was installed in 1970. In the same year a similar plant was installed at Faro, near the Vangorda Creek end of the 225-mile transmission line.

The two Snare River hydro-electric power developments, with a total generating capacity of 14,000 kw, commissioned in 1948 and 1960, respectively, supply power to the gold mines in the Yellowknife area, the city of Yellowknife, and the communities of Rae/Edzo. These two plants are operated by remote control from Yellowknife and have been supplemented by a 5,150-kw diesel-electric plant in Yellowknife, completed in 1970. The Taltson River hydro-electric plant is an 18,000-kw development supplying the lead-zinc mining and milling operation at Pine Point and the communities of Fort Smith, Pine Point and Fort Resolution, NWT. This plant is operated by remote control from Fort Smith. A 5,150-kw diesel-electric plant was completed in 1970 at Pine Point.

Diesel-electric power plants are operated by the Commission at Aklavik, Coppermine, Tuktoyaktuk, Fort Norman, Fort Franklin, Cambridge Bay, Fort Good Hope, Norman Wells, Chesterfield Inlet, Baker Lake, Rankin Inlet, Gjoa Haven, Whale Cove, Spence Bay, Eskimo Point, Holman, Pelly Bay, Cape Dorset, Arctic Red River, Sach's Harbour, Coral Harbour, Repulse Bay, Lake Harbour, Pangnirtung, Broughton Island, Igloolik, Hall Beach, in the Northwest Territories, at Dawson in the Yukon Territory, and at Field in British Columbia. The Commission also operates and maintains utility plants comprising electric power, central heat and water and sewerage services at Inuvik, Frobisher Bay and Fort McPherson in the Northwest Territories and Moose Factory in Ontario; it operates the water and sewerage systems at Dawson in the Yukon Territory, and provides electric power and central heating services at Fort Simpson, NWT. A 5,150-kw diesel unit was added to the Inuvik station in 1971, raising the capacity of that station to more than 10,000 kw. The only other addition of consequence during the year was a 500-kw unit placed into service at Northland Utilities' Hay River plant.

Northland Utilities, an Alberta Power associate company, added two 1,200-kw generators to the Hay River plant in 1972 to replace the present mobile generators. Northern Canada Power's 69-kv transmission line connecting Tuktoyaktuk and Inuvik was completed in 1972.

13.3.10 Electric power statistics

Electric power statistics presented in this Section are based on reports of all electrical utilities and all industrial establishments that generate energy, regardless of whether or not any is sold, and therefore show the total production and distribution of electrical energy in Canada. Utilities are defined as companies, commissions, municipalities or individuals whose primary function is to sell most of the electrical energy that they have either generated or purchased. Industrial establishments are defined as companies or individuals that generate electricity mainly for use in their own plants.

The current series of electric power statistics dates back to 1956. Earlier reports, entitled *Central electric stations*, were concerned solely with the electrical utility industry and hence excluded statistics relating to power produced by industrial establishments for their own use, although power sold by such establishments was included. Figures appear in Tables 13.15-13.20.

Of the total power generation of 216,472,203,000 kwh in 1971, 74.4% was produced from hydraulic sources and 25.6% from thermal units. The proportions differed markedly from province to province, ranging from a high of 98.8% hydro and 1.2% thermal in Quebec to 100% thermal generation in Prince Edward Island, Newfoundland, with 93.9% hydro and 6.1% thermal, narrowly edged Manitoba with 93.7% and 6.3% and British Columbia with 91.8% and 8.2%, respectively. The Territories produced 75.5% of their power needs from hydro sources and 24.5% from thermal units. Ontario with 55.5% hydro and 44.5% thermal and Saskatchewan with 42.3% hydro and 57.7% thermal were closest of all the provinces to a balance between the two forms of energy source. In decreasing proportion of use of hydraulic sources came New Brunswick with 36.5% against 63.5% thermal; Nova Scotia, 19.0% and 81.0%; and Alberta with 10.8% and 89.2%. More detailed information will be found in Table 13.15.

Table 13.16 gives summary figures of power production and distribution classified by province, and Tables 13.17 and 13.18 give figures classified by type of production establishment. Total installed capacity in Canada amounted to 46,675,733 kw in 1971, an increase of 3,850,088 kw over 1970. Of the 1971 total, 41,369,224 kw were accounted for by utilities and the remainder by industrial establishments. During 1970 and 1971, total sales to

ultimate customers amounted to 137,972,093,000 kwh and 147,202,729,000 kwh, respectively, of which 99.8% in both years was sold by utilities.

Sales to power customers, excluding sales to industrial establishments with generating facilities, made up 48.7% of the total in 1970 and 46.8% in 1971, sales to domestic and farm customers were 31.5% and 31.6%, respectively, and commercial sales 18.8% and 20.6%, respectively. Exports to the United States in 1971 amounted to 7,320,922,000 kwh, an increase of 1,689,532,000 kwh over 1970.

Average domestic and farm consumption rose from 7,147 kwh in 1970 to 7,488 kwh in 1971. Among the provinces, the averages in 1971 varied from a low of 4,296 kwh in Prince Edward Island to a high of 9,210 kwh in Manitoba. For domestic and farm customers across Canada the average annual bill was \$120.48 in 1971 as against \$112.77 in 1970. Although many utilities do not keep records on farm customers separate from other domestic customers, the data reported on farm service in Manitoba, Saskatchewan and Alberta only indicate that the average consumption rose from 9,906 kwh per customer in 1970 to 11,006 kwh in 1971 and the average bill from \$175.70 to \$189.40. Table 13.19 provides more detailed information including the total number of customers served.

In 1971, natural gas accounted for 10.8% of thermal generation by utilities, coal for 69.5%, petroleum fuels for 11.8% and nuclear fuel for 7.9%; corresponding proportions in 1970 were 12.7%, 72.3%, 12.7%, and 2.3%, respectively. Details of the type of fuel used, by province, appear in Table 13.20.

Sources

13.1.1 Energy Development Sector, Department of Energy, Mines and Resources.

13.1.2 National Energy Board.

13.2 - 13.3.7 Energy Development Sector, Department of Energy, Mines and Resources.

13.3.8 Manufacturing and Primary Industries Division, Industry Statistics Branch, Statistics Canada.

13.3.9 Energy Development Sector, Department of Energy, Mines and Resources and respective provincial government agencies.

13.3.10 Manufacturing and Primary Industries Division, Industry Statistics Branch, Statistics Canada.

Tables

.. not available

... not appropriate or not applicable

— nil or zero

-- too small to be expressed

e estimate

p preliminary

r revised

certain tables may not add due to rounding

13.1 Estimated energy-use balance in Canada, 1971

Utilization area	Natural units '000	Energy source used	Crude oil equivalent '000 bbl	% of total energy consumed in Canada	
Electrical (total available)	212,530 <i>Mkwh</i>	Hydro	304,962 ¹	25.978	34.3 ²
	161,030 "	Thermal	97,531	8.308	
	51,500 "	Coal			
		Natural gas			
		Oil			
		Nuclear			
					(1.9%)
					(22.3%)
					(24.2%)
					(75.8%)
Transportation					
Road	173,386 <i>bbl</i> ³	Motor gasoline	156,026	13.291	18.4
	8,405 "	Diesel fuel oil	8,440	0.719	
Air	1,417 "	Aviation gasoline	1,234	0.105	
	17,167 "	Aviation turbo fuel	16,018	1.364	
Rail	124 <i>ton</i> ⁴	Coal	307	0.026	
	242 <i>bbl</i>	Kerosene	237	0.020	
	12,902 "	Diesel fuel oil	12,957	1.104	
	360 "	Light fuel oil	361	0.031	
	1,474 "	Heavy fuel oil	1,597	0.136	
Marine	149 <i>ton</i>	Coal	665	0.057	
	66 <i>bbl</i>	Kerosene	65	0.006	
	5,832 "	Diesel fuel oil	5,857	0.499	
	101 "	Light fuel oil	101	0.009	
	10,832 "	Heavy fuel oil	11,736	1.000	
Residential and commercial					
	859 <i>ton</i>	Coal	3,166	0.270	21.5
	8 "	Coke	33	0.003	
	62 <i>bbl</i>	Crude oil	62	0.005	
	15,770 "	Kerosene	15,427	1.314	
	9,526 "	Diesel fuel oil	9,567	0.815	
	92,426 "	Light fuel oil	92,817	7.906	
	38,451 "	Heavy fuel oil	41,661	3.549	
	471,528 <i>Mcf</i>	Natural gas	81,256	6.922	
	12,512 <i>bbl</i>	Liquefied petroleum gases	8,830	0.752	
Industrial					
	2,362 <i>ton</i>	Coal	9,637	0.821	22.9
	5,116 "	Coke	21,866	1.863	
	78,623 <i>Mcf</i>	Coke oven gas	6,774	0.577	
	2,398 <i>bbl</i>	Liquefied petroleum gases	1,692	0.144	
	1,113 "	Crude oil	1,113	0.095	
	15,249 "	Still gas	16,521	1.407	
	218 "	Motor gasoline	196	0.017	
	2,994 "	Kerosene	2,929	0.250	
	13,477 "	Diesel fuel oil	13,534	1.153	
	10,345 "	Light fuel oil	10,389	0.885	
	54,306 "	Heavy fuel oil	58,840	5.012	
	269 "	Petroleum coke	295	0.025	
	--	Aviation gasoline	--	--	
	15 "	Aviation turbo fuel	14	0.001	
	724,789 <i>Mcf</i>	Natural gas	124,899	10.639	
Non-energy use	3,955 <i>bbl</i>	Liquefied petroleum gases and petroleum coke	3,751	0.320	0.3
Losses and adjustments			30,580	2.603	2.6
Total			1,173,944		100.0
		Commodity use			
		Oil	522,574		44.5
		Natural gas	238,853		20.3
		Coal	107,555		9.2
		Hydro	304,962		26.0
		Total	1,173,944		100.0

¹ Equivalent fuel displacement.

² The value for the hydro input into electricity is obtained by using the same ratio as that for the 1971 thermal input into electricity. This was not the method used in constructing the "Approximate energy-use balance in Canada, 1965", presented in the 1969 Year Book, p. 638. Had the present method been used, the 19% figure for the proportion of energy used in the generation of electricity would have been approximately 35%. The coal equivalent of the hydro input would have been about 48.8 MM metric tons instead of the 14.6 MM metric tons shown.

³ 1 barrel = 35 Canadian gallons.

⁴ Short tons = 2,000 lb.

13.2 Supply and consumption of oil and gas, 1960, 1965 and 1969-71

Item and year		Supply and consumption							
		Net supply		Imports	Into other fuels	Losses and adjustments ¹	Total		
Output	Exports								
Motor gasoline ('000 bbl)	1960	99,452	1,139	1,059	—	+2,696	102,068		
	1965	127,009	404	1,958	—	+2,051	130,614		
	1969	155,233	701	4,750	—	+1,453	160,735		
	1970	163,567	867	5,388	—	+1,155	169,243		
	1971	166,989	611	4,092	—	+5,501	175,971		
Fuel oils ² ('000 bbl)	1960	135,077	591	27,625	3,975	+2,090	160,226		
	1965	177,826	1,406	49,714	9,260	-855	216,019		
	1969	215,849	2,758	57,549	16,169	-12,486	241,985		
	1970	244,033	3,925	56,433	16,530	-758	279,253		
	1971	266,876	11,267	45,084	17,129	+1,154	284,718		
Other petroleum products ³ ('000 bbl)	1960	18,402	277	4,410	—	+449	22,984		
	1965	21,368	70	3,992	—	-26	25,264		
	1969	26,691	86	7,843	2	+203	34,650		
	1970	30,398	244	6,443	1	+401	36,996		
	1971	32,843	281	4,617	—	-55	37,124		
Total petroleum products ('000 bbl)	1960	252,931	2,007	3,3094	3,975	+5,235	285,278		
	1965	326,203	1,880	55,664	9,260	+1,170	371,897		
	1969	397,773	3,545	70,142	16,171	-10,829	437,370		
	1970	437,998	5,036	68,264	16,531	+798	485,492		
	1971	466,708	12,159	53,793	17,129	+6,600	497,813		
Crude oil ('000 bbl)	1960	194,823	41,372	126,797	279,140	—	1,108		
	1965	319,608	107,697	144,204	352,590	-1,930	1,595		
	1969	448,723	202,718	190,507	432,859	-2,864	789		
	1970	504,485	244,466	208,363	467,252	-1,051	79		
	1971	538,744	272,783	244,243	507,498	-577	2,129		
Liquefied petroleum gases ⁴ ('000 bbl)	1960	6,524	1,387	119	320	+236	5,172		
	1965	24,241	7,668	7	1,508	-3,895	11,177		
	1969	37,432	15,450	711	2,050	-5,336	15,307		
	1970	41,772	21,084	251	1,752	-4,434	14,753		
	1971	45,232	22,592	129	1,164	-4,674	16,931		
Natural gas (MMcf)	1960	540,726	109,740	5,551	44,428	-5,946	386,163		
	1965	1,195,091	404,709	17,746	71,487	-11,603	725,038		
	1969	1,824,649	680,109	34,936	77,948	-4,015	1,097,513		
	1970	2,092,918	776,114	10,860	92,372	-25,682	1,209,610		
	1971	2,279,110	910,778	14,349	93,496	+3,382	1,292,567		
		Consumption							
		Energy supply industries	Transportation	Domestic and farm	Commercial	Industrial	Non-energy use	Losses and adjustments	Total
Motor gasoline ('000 bbl)	1960	294	100,370	—	—	—	—	+1,402	102,068
	1965	266	128,542	—	—	—	—	+1,805	130,614
	1969	226	158,677	—	—	—	—	+1,832	160,735
	1970	218	167,498	—	—	—	—	+1,527	169,243
	1971	218	173,386	—	—	—	—	+2,367	175,971
Fuel oils ² ('000 bbl)	1960	9,305	25,879	72,209	18,570	32,714	—	+1,551	160,226
	1965	12,200	33,138	85,500	35,059	47,321	—	+2,801	216,019
	1969	13,779	36,736	95,340	54,072	61,004	—	-18,946	241,985
	1970	14,452	38,206	100,572	56,710	65,378	—	+3,935	279,253
	1971	15,401	40,214 ^c	99,890	56,283 ^e	65,722 ^e	—	+7,208	284,718
Other petroleum products ³ ('000 bbl)	1960	11,398	8,491	—	—	160	2,672	+264	22,984
	1965	11,582	10,360	—	—	243	2,721	+358	25,264
	1969	13,612	16,757	—	—	2	3,641	+638	34,650
	1970	14,703	18,061	—	—	—	3,644	+588	36,996
	1971	15,533	18,584	—	—	—	2,433	+573	37,124
Total petroleum products ('000 bbl)	1960	20,997	134,740	72,209	18,570	32,874	2,672	+3,217	285,278
	1965	24,048	172,040	85,500	35,059	47,564	2,721	+4,964	371,897
	1969	27,617	212,170	95,340	54,072	61,006	3,641	-16,476	437,370
	1970	29,373	223,765	100,572	56,710	65,378	3,644	+6,050	485,492
	1971	31,152	232,183	99,890	56,283	65,722	2,433	+10,149	497,813
Crude oil ('000 bbl)	1960	1,055	—	—	80	—	—	-27	1,108
	1965	500	—	—	137	—	—	+958	1,595
	1969	587	—	—	59	—	—	+143	789
	1970	1,113	—	—	49	—	—	-1,084	79
	1971	1,113	—	—	62	—	—	+955	2,129
Liquefied petroleum gases ⁴ ('000 bbl)	1960	353	—	3,234	—	494	1,010	+81	5,172
	1965	812	—	7,797	—	775	1,620	+173	11,177
	1969	426	—	11,118	—	1,710	2,202	-149	15,307
	1970	569	—	10,902	—	1,492	2,125	-335	14,753
	1971	690	—	..	—	..	1,522	..	16,931
Natural gas (MMcf)	1960	40,683	—	108,324	50,003	120,255	—	+66,898	386,163
	1965	131,563	—	187,354	103,494	216,209	—	+86,418	725,038
	1969	219,753	—	231,465	181,761	368,576	—	+95,958	1,097,513
	1970	255,785	—	241,793	209,367	399,057	—	-103,608	1,209,610
	1971	272,086	—	251,094	220,434	452,703	—	+96,250	1,292,567

¹ Includes stock changes and interregional transfers.² Diesel fuel oil, light fuel oil, heavy fuel oil and kerosene.³ Still gas, petroleum coke, aviation gasoline and aviation turbo fuel.⁴ Primary and secondary energy supplies are combined.

13.3 Crude oil refining capacity, by region, as at Jan. 1, 1969-71

Region	1969		1970		1971	
	b/d ¹	%	b/d ¹	%	b/d ¹	%
Atlantic Provinces	132,600	10.2	135,100	10.0	294,300	17.6
Quebec	449,600	34.6	460,600	34.0	577,500	34.5
Ontario	367,000	28.3	389,200	28.8	389,200	23.2
Prairie Provinces and Northwest Territories	236,950	18.3	241,550	17.9	288,700	17.2
British Columbia	111,700	8.6	125,800	9.3	125,800	7.5
Canada	1,297,850	100.0	1,352,250	100.0	1,675,500	100.0

¹ Barrels per day.**13.4 Domestic and foreign crude oil received at Canadian refineries, by region, 1969-71 (barrels per day)**

Region	1969		1970		1971	
	Domestic	Foreign	Domestic	Foreign	Domestic	Foreign
Atlantic Provinces and Quebec	—	520,689	—	569,537	—	667,991
Ontario	340,727	1,155	369,566	1,257	371,173	1,119
Prairie Provinces and Northwest Territories	215,695	—	219,646	—	223,612	—
British Columbia	106,531	—	120,284	—	126,416	—
Canada	662,953	521,844	709,496	570,794	721,201	669,110

13.5 Pipeline movements of oil, 1968-71 (thousand barrels)

Item	1968	1969	1970	1971
RECEIPTS				
Crude oil and pentanes plus				
Canadian	407,396	444,514	501,329	537,997
Imports	133,353	142,585	157,223	160,493
Liquefied petroleum gases and products				
Canadian	86,655	88,647	103,426	116,582
Imports	1,696	1,142	942	—
Total, net receipts	629,099	676,888	762,920	815,072
DELIVERIES¹				
Crude oil and pentanes plus				
Canadian	365,771	381,577	413,630	424,082
Exports	169,032	202,535	243,478	272,423
Liquefied petroleum gases and products				
Canadian	84,381	84,947	98,520	109,022
Exports	3,785	5,052	5,788	7,061
Total, net deliveries	622,970	674,111	761,417	812,588

¹ Deliveries to non-pipeline carriers, foreign pipelines, and terminals including refineries and distribution centres.**13.6 Operating and financial statistics of oil pipelines¹, 1968-71**

Item		1968	1969 ^r	1970	1971
PIPELINE MILEAGE					
Trunk lines	No.	10,266	10,670	10,538	11,114
Gathering lines	"	4,566	6,436 ¹	6,525 ¹	6,724 ¹
DAILY AV. OF NET DELIVERIES					
Trunk lines	'000 bbl	1,702	1,847	2,086	2,226
Gathering lines	"				
BARREL MILES					
Trunk lines	'000,000	282,530	319,984	367,865	401,721
AV. MILES PER BARREL					
Trunk lines	No.	454	475	482	497
Property account	\$'000	842,865	884,602	900,775	940,480
Long-term debt	"	342,698	375,798	407,956	389,158
Operating revenues ²	"	184,730	209,911	231,773	248,299
Operating expenses	"	45,583	49,640	55,436	59,538
Net income (after income tax) ²	"	57,574	60,380	75,959	85,572
Av. employees ²	No.	1,459	1,428	1,414	1,429
Salaries and wages ²	\$'000	13,219	13,740	15,010	16,090

¹ Includes 1,781 miles of gathering lines within producing fields in 1969; 1,715 miles in 1970; and 1,869 miles in 1971 (data not available for 1968).² Revenue and employee data are incomplete because pipeline operations represent only part of the activities of some companies and the relevant data are not separable.

13.7 Pipeline receipts and disposition by natural gas utilities, 1968-71 (million cubic feet)

Item	1968	1969	1970 ^r	1971
RECEIPTS				
Transport system	1,091,493	1,290,673	1,511,494	1,682,796
Distribution systems	292,336	315,744	326,352	345,253
Imports	81,554	34,936	10,860	14,349
Other	491	883	1,443	355
Total, net receipts	1,465,874	1,642,237	1,850,149	2,042,754
From storage	55,727	65,024	70,359	97,363
Total, supply	1,521,601	1,707,261	1,920,508	2,140,117
DISPOSITION				
Sales to ultimate consumers	766,005	844,713	917,441	1,001,329
Exports	604,445	680,109	779,497	910,778
Other	6,802	13,297	6,590	13,514
Total, net deliveries	1,377,252	1,538,120	1,703,528	1,925,621
To storage	57,758	66,300	93,088	93,485
Line pack fluctuation	2,749	3,622	4,395	853
Gas used in system	62,403	75,325	88,369	100,859
Line losses and unaccounted amounts	21,440	23,894	31,127	19,300
Total, demand	1,521,601	1,707,261	1,920,508	2,140,117

13.8 Estimated growth of nuclear capacity in net electrical output, 1970-90 (electrical megawatts)

Region	1970	1975	1980	1985	1990
Canada	480	2,500	7,000	16,000	35,000
United States	6,850	64,000	165,000	300,000	500,000
Western Europe	10,000	30,000	92,000	197,000	320,000
Japan	1,290	7,000	27,000	60,000	120,000
Other countries	380	3,000	17,000	55,000	120,000
Total	19,000	106,500	308,000	628,000	1,095,000

13.9 Installed hydro- and thermal-electric generating capacity, by province, as at Jan. 1, 1972 (thousand kilowatts)

Province or territory	Hydro	Thermal	Total
Newfoundland	1,925	429	2,354
Prince Edward Island	—	93	93
Nova Scotia	162	808	970
New Brunswick	570	652	1,222
Quebec	13,766	1,018	14,784
Ontario	7,010	7,984	14,994
Manitoba	1,625	475	2,100
Saskatchewan	567	966	1,533
Alberta	616	2,063	2,679
British Columbia	4,299	1,498	5,797
Yukon Territory	26	34	60
Northwest Territories	35	57	92
Canada	30,601	16,077	46,678
Capacity as at Jan. 1, 1971	28,293	14,523	42,816
Percentage increase during 1971	8.2	10.7	9.0

13.10 Electrical energy consumption in Canada, selected years 1950-71

Year	Total consumption gwh ¹	Percentage consumption			Losses and unaccounted
		Commercial ²	Domestic and farm	Industrial	
1950	53,459	11	13	67	9
1955	77,946	12	16	63	9
1960	109,302	12	19	60	9
1965	144,165	16	21	55	8
1970	201,311	13	20	58	9
1971	211,327	15	21	56	8

¹ Gigawatt = million kilowatt hours.² Includes street lighting.

13.11 Electrical energy consumption, by region, 1960, 1965 and 1971

Region and year	Total consumption <i>gwh</i>	% of total consumption	Percentage consumption			
			Commer- cial ¹	Domestic and farm	Industrial	Losses and unaccounted
Atlantic Provinces	1960	4,924	13	20	58	9
	1965	8,228	15	18	60	7
	1971	13,674	17	19	56	8
Quebec	1960	44,002	7	11	74	8
	1965	52,229	12	16	66	6
	1971	70,585	14	19	58	9
Ontario	1960	37,157	15	25	48	12
	1965	49,276	34	20	45	9
	1971	72,780	34	16	52	8
Prairie Provinces	1960	9,617	9	22	34	13
	1965	14,994	10	26	34	10
	1971	25,649	12	16	47	11
British Columbia ²	1960	13,602	12	9	68	7
	1965	19,438	14	12	66	7
	1971	28,639	14	13	64	6
Canada	1960	109,302	100	12	19	60
	1965	144,165	100	16	21	55
	1971	211,327	100	15	21	56

¹ Includes street lighting.² Includes Yukon Territory and Northwest Territories.**13.12 Electrical energy consumption per capita, by region, 1960, 1965 and 1971**

Region and year	Total consumption <i>gwh</i>	Population '000	Consumption per capita <i>kwh</i>
Atlantic Provinces	1960	4,924	1,867
	1965	8,228	1,968
	1971	13,674	2,057
Quebec	1960	44,002	5,142
	1965	52,229	5,685
	1971	70,585	6,028
Ontario	1960	37,157	6,111
	1965	49,276	6,788
	1971	72,780	7,703
Prairie Provinces	1960	9,617	3,112
	1965	14,994	3,365
	1971	25,649	3,542
British Columbia ¹	1960	13,602	1,638
	1965	19,438	1,838
	1971	28,639	2,238
Canada	1960	109,302	17,870
	1965	144,165	19,644
	1971	211,327	21,568

¹ Includes Yukon Territory and Northwest Territories.**13.13 Net generating capability, by province, 1971 (thousand kilowatts)**

Province or territory	Type of generating facility				Total
	Hydro- electric	Thermal-electric Steam ¹	Internal combustion	Gas turbine	
Newfoundland	1,899	335	27	28	2,289
Prince Edward Island	—	66	7	14	87
Nova Scotia	160	767	3	25	955
New Brunswick	580	623	4	25	1,232
Quebec	12,897	781	34	36	13,748
Ontario	6,820	7,396	8	373	14,597
Manitoba	1,473	392	23	24	1,912
Saskatchewan	582	786	29	88	1,485
Alberta	681	1,755	29	183	2,648
British Columbia	4,440	986	130	187	5,743
Yukon Territory	26	—	26	—	52
Northwest Territories	35	1	30	2	68
Canada	29,593	13,888	350	985	44,816

¹ Includes 1,204,000 kw of nuclear capability in Ontario and 116,000 kw in Quebec.

13.14 Capability and firm power peak-load requirements, actual 1961 and 1968-71, and forecast 1972-76 (thousand kilowatts)

Item	Actual					Forecast				
	1961	1968	1969	1970	1971	1972	1973	1974	1975	1976
NET GENERATING CAPABILITY										
Hydro-electric	18,389	24,161	26,134	27,392	29,593	30,878	32,563	34,010	35,213	38,371
Steam, conventional	3,773	8,877	10,019	12,494	12,568	13,512	14,987	16,025	17,306	20,170
nuclear	—	200	208	194	1,320	1,230	2,480	2,480	2,480	3,209
Internal combustion	240	310	321	328	350	370	364	369	378	384
Gas turbine	351	875	870	914	985	1,107	1,224	1,368	1,552	1,566
Total, net generating capability	22,753	34,423	37,552	41,322	44,816	47,097	51,618	54,252	56,929	63,700
Receipts of firm power from United States	2	110	3	93	3	3	3	3	3	3
Deliveries of firm power to United States	146	105	111	170	453	391	383	353	159	513
Total, net capability	22,609	34,428	37,444	41,245	44,366	46,709	51,238	53,902	56,773	63,190
PEAK LOADS										
Firm power peak loads within Canada	18,353	30,151	32,022	34,447	35,720	39,785	42,351	44,926	47,788	50,763
Indicated shortages	—	149	70	145	—	—	—	—	—	—
Total, indicated peak loads within Canada	18,353	30,300	32,092	34,592	35,720	39,785	42,351	44,926	47,788	50,763
Indicated reserve	4,256	4,128	5,352	6,653	8,646	6,924	8,887	8,976	8,985	12,427

13.15 Electrical energy generated, by type of station, 1961 and 1968-71, and by province 1970 and 1971 (thousand kilowatt hours)

Year and province or territory	Generated by		Total	Year and province or territory	Generated by		Total
	Water power	Thermal power			Water power	Thermal power	
1961	103,919,241	9,794,077	113,713,318	1970	156,708,854	48,014,043	204,722,897
1968	134,972,933	41,405,342	176,378,275	1971	160,984,485	55,487,718	216,472,203
1969	149,246,787	41,855,443	191,102,230				
1970							
Newfoundland	4,658,605	195,371	4,853,976	Newfoundland	4,723,275	308,146	5,031,421
Prince Edward Island	—	250,413	250,413	Prince Edward Island	—	274,026	274,026
Nova Scotia	592,110	2,918,954	3,511,064	Nova Scotia	782,885	3,332,121	4,115,006
New Brunswick	2,665,709	2,476,114	5,141,823	New Brunswick	2,070,619	3,609,076	5,679,695
Quebec	74,499,170	1,377,466	75,876,636	Quebec	75,355,311	891,995	76,247,306
Ontario	39,084,487	24,771,963	63,856,450	Ontario	38,110,708	30,528,819	68,639,527
Manitoba	7,765,716	683,025	8,448,741	Manitoba	9,122,313	615,887	9,738,200
Saskatchewan	2,610,087	3,401,292	6,011,379	Saskatchewan	2,568,339	3,507,029	6,075,368
Alberta	1,216,600	8,818,694	10,035,294	Alberta	1,201,099	9,896,465	11,097,564
British Columbia	23,206,455	3,002,495	26,208,950	British Columbia	26,645,584	2,392,698	29,038,282
Yukon Territory	182,980	41,407	224,387	Yukon Territory	191,325	47,329	238,654
Northwest Territories	226,935	76,849	303,784	Northwest Territories	213,027	84,127	297,154
Canada, 1970	156,708,854	48,014,043	204,722,897	Canada, 1971	160,984,485	55,487,718	216,472,203

13.16 Summary electric power statistics, by province, 1970 and 1971

Year and province or territory	Installed generating capacity kw	Energy made available in Canada '000 kwh	Exported to United States '000 kwh	Ultimate customers ¹	Total revenue from ultimate customers ² \$'000	Electrical utilities Em- ployees	Salaries and wages \$'000
1970							
Newfoundland	1,248,018	4,770,008	—	117,141	35,414	1,502	9,396
Prince Edward Island	77,391	250,413	—	31,311	6,308	181	1,251
Nova Scotia	931,311	3,705,787	—	244,788	52,931	2,186	15,572
New Brunswick	1,200,850	4,221,354	756,822	186,320	48,174	1,285	10,582
Quebec	14,047,038	69,729,472	50,976	1,937,005	481,282	12,625	123,210
Ontario	13,700,161	69,488,172	3,598,358 ³	2,449,858	618,821	19,575	191,262
Manitoba	1,794,010	8,766,836	293,555 ⁴	319,500	79,508	2,527	21,062
Saskatchewan	1,532,860	5,235,920	—	318,311	76,520	1,678	15,773
Alberta	2,674,139	9,879,891	—	494,530	117,310	2,528	22,797
British Columbia	5,473,387	25,760,604	931,679 ⁵	767,426	189,476	3,103	29,512
Yukon Territory	57,900	224,387	—	4,719	4,064	114	944
Northwest Territories	88,580	303,784	—	6,463	5,817	294	2,846
Canada, 1970	42,825,645	202,336,628	5,631,390	6,877,372	1,715,625	47,598	444,207

13.16 Summary electric power statistics, by province, 1970 and 1971 (concluded)

Year and province or territory	Installed generating capacity <i>kw</i>	Energy made available in Canada <i>'000 kwh</i>	Exported to United States <i>'000 kwh</i>	Ultimate customers ¹	Total revenue from ultimate customers ² <i>\$'000</i>	Electrical utilities Em- ployees	Salaries and wages <i>\$'000</i>
1971							
Newfoundland	2,353,457	4,770,954	—	120,443	39,444	1,540	9,711
Prince Edward Island	92,241	274,026	—	32,596	7,308	194	1,479
Nova Scotia	970,541	4,122,346	—	252,283	59,548	2,274	17,747
New Brunswick	1,220,349	4,617,727	1,334,716	194,892	54,779	1,357	12,461
Quebec	14,784,854	70,747,544	66,868	1,991,094	513,536	13,884	134,807
Ontario	14,992,906	72,955,891	4,060,059 ⁶	2,482,121	688,052	20,875	220,958
Manitoba	2,100,025	9,313,091	686,787 ⁷	324,089	85,489	2,664	23,203
Saskatchewan	1,532,860	5,557,285	—	319,968	80,287	1,637	16,360
Alberta	2,678,999	10,946,986	—	506,767	129,533	2,552	23,536
British Columbia	5,798,069	28,688,000	1,172,492 ⁸	805,717	208,940	3,247	33,675
Yukon Territory	60,110	238,654	—	5,321	4,648	116	933
Northwest Territories	91,322	297,154	—	6,817	6,721	286	2,955
Canada, 1971	46,675,733	212,529,658	7,320,922	7,042,108	1,878,285	50,626	497,825

¹ Excludes industrial establishments that purchase power and have generating facilities.

² Excludes revenue from sales to industrial establishments that purchase power and have generating facilities, totalling \$103,397,000 in 1970 and \$113,861,000 in 1971.

³ Includes 926,949,000 kwh "no value" energy.

⁴ Includes 2,769,000 kwh "no value" energy.

⁵ Includes 21,503,000 kwh "no value" energy.

⁶ Includes 1,104,061,000 kwh "no value" energy.

⁷ Includes 1,446,000 kwh "no value" energy.

⁸ Includes 405,251,000 kwh "no value" energy.

13.17 Summary electric power statistics, by type of establishment, 1970 and 1971

Year and item		Electrical utilities			Industrial establishments	Total
		Publicly operated	Privately operated	Total		
1970						
Installed generating capacity	<i>kw</i>	33,215,826	4,308,768	37,524,594	5,301,051	42,825,645
Energy generated	<i>'000 kwh</i>	151,406,533	20,523,808	171,930,341	32,792,556	204,722,897
Hydro	"	115,674,422	13,181,598	128,856,020	27,852,834	156,708,854
Thermal	"	35,732,111	7,342,210	43,074,321	4,939,722	48,014,043
Energy made available in Canada	<i>'000 kwh</i>	..	..	..	..	202,336,628
Disposal of energy in Canada ¹	"	140,407,584	14,440,566	154,848,150	47,488,478	202,336,628
Energy exported to United States	"	4,361,260	770,453	5,131,713	499,677	5,631,390
Ultimate customers in Canada	<i>No.</i>	6,316,280	555,352	6,871,632	5,740	6,877,372
Domestic and farm	"	5,596,996	474,382	6,071,378	5,411	6,076,789
Commercial	"	652,339	70,236	722,575	309	722,884
Power	"	66,945	10,734	77,679	20	77,699
Street lighting	"	..	..	..	..	..
Revenue from ultimate customers ²	<i>\$'000</i>	1,554,621	158,887	1,713,508	2,117	1,715,625
Revenue from exports to United States	"	25,487	4,027	29,514	2,623	32,137
Employees	<i>No.</i>	43,343	4,255	47,598	..	..
Salaries and wages	<i>\$'000</i>	409,860	34,347	444,207	..	..
1971						
Installed generating capacity	<i>kw</i>	36,091,981	5,277,243	41,369,224	5,306,509	46,675,733
Energy generated	<i>'000 kwh</i>	162,892,104	21,067,764	183,959,868	32,512,335	216,472,203
Hydro	"	120,444,563	12,870,854	133,315,417	27,669,068	160,984,485
Thermal	"	42,447,541	8,196,910	50,644,451	4,843,267	55,487,718
Energy made available in Canada	<i>'000 kwh</i>	..	..	..	..	212,529,658
Disposal of energy in Canada ¹	"	149,593,644	14,980,171	164,573,815	47,955,843	212,529,658
Energy exported to United States	"	5,841,653	921,735	6,763,388	557,534	7,320,922
Ultimate customers in Canada	<i>No.</i>	6,464,157	572,798	7,036,955	5,153	7,042,108
Domestic and farm	"	5,719,767	490,537	6,210,304	4,836	6,215,140
Commercial	"	678,694	71,090	749,784	298	750,082
Power	"	65,696	11,171	76,867	19	76,886
Street lighting	"	..	..	..	..	..
Revenue from ultimate customers ²	<i>\$'000</i>	1,701,702	174,617	1,876,319	1,966	1,878,285
Revenue from exports to United States	"	36,078	5,521	41,599	3,622	45,221
Employees	<i>No.</i>	46,426	4,200	50,626	..	..
Salaries and wages	<i>\$'000</i>	463,007	34,818	497,825	..	..

¹ Excludes sales by electrical utilities to industrial establishments with generating facilities, sales by industrial establishments with generating facilities to electrical utilities, and inter-industrial sales.

² Excludes revenue from sales by electrical utilities to industrial establishments with generating facilities, and inter-industrial sales.

13.18 Electric power generated classified by type of establishment, by province, 1970 and 1971 (thousand kilowatt hours)

Year and province or territory	Electrical utilities		Industrial establishments	Total
	Publicly operated	Privately operated		
1970				
Newfoundland	1,448,219	2,983,502	422,255	4,853,976
Prince Edward Island	3,045	247,368	—	250,413
Nova Scotia	1,749,818	1,375,502	385,744	3,511,064
New Brunswick	4,343,719	137,433	660,671	5,141,823
Quebec	52,282,973	6,185,071	17,408,592	75,876,636
Ontario	59,381,597	1,579,026	2,895,827	63,856,450
Manitoba	8,411,163	—	37,578	8,448,741
Saskatchewan	5,131,197	684,814	195,368	6,011,379
Alberta	2,423,846	6,964,883	646,565	10,035,294
British Columbia	15,797,096	335,313	10,076,541	26,208,950
Yukon Territory	181,883	19,756	22,748	224,387
Northwest Territories	251,977	11,140	40,667	303,784
Canada, 1970	151,406,533	20,523,808	32,792,556	204,722,897
1971				
Newfoundland	1,589,236	3,085,183	357,002	5,031,421
Prince Edward Island	2,124	271,902	—	274,026
Nova Scotia	2,412,191	1,465,972	236,843	4,115,006
New Brunswick	5,005,202	96,052	578,441	5,679,695
Quebec	54,353,545	5,962,372	15,931,389	76,247,306
Ontario	64,364,651	1,562,128	2,712,748	68,639,527
Manitoba	9,729,185	—	9,015	9,738,200
Saskatchewan	5,415,563	473,459	186,346	6,075,368
Alberta	2,603,792	7,804,798	688,974	11,097,564
British Columbia	16,957,259	312,050	11,768,973	29,038,282
Yukon Territory	192,005	20,349	26,300	238,654
Northwest Territories	267,351	13,499	16,304	297,154
Canada, 1971	162,892,104	21,067,764	32,512,335	216,472,203

13.19 Domestic and farm service by electrical utilities and industrial establishments, 1968-71

Item		1968	1969	1970	1971
Customers	No.	5,749,234	5,918,409	6,076,789	6,215,140
Kilowatt hours sold	'000	37,779,593	40,446,333	43,430,777	46,541,538
Revenue received	\$'000	560,671	607,501	685,266	748,779
Kilowatt hours per customer	No.	6,571	6,834	7,147	7,488
Average annual bill	\$	97.52	102.64	112.77	120.48
Revenue per kwh	¢	1.48	1.50	1.58	1.61

13.20 Fuel used by electrical utilities to generate power, by province, 1970 and 1971

Year and province or territory	Coal		Petroleum fuels		Gas	
	Quantity tons	Value \$	Quantity gal	Value \$	Quantity Mcf	Value \$
1970						
Newfoundland	—	—	19,139,349	2,489,566	—	—
Prince Edward Island	—	—	20,369,887	1,284,065	—	—
Nova Scotia	608,186	5,378,040	118,221,080	6,539,597	—	—
New Brunswick	125,490	959,722	96,992,369	5,623,919	—	—
Quebec	—	—	65,265,512	4,642,769	—	—
Ontario	8,479,952	78,363,219	40,321,071	5,170,360	351,100	151,246
Manitoba	556,070	2,681,833	4,592,156	761,741	671,023	187,113
Saskatchewan	2,170,683	3,880,824	5,528,149	277,634	14,741,440	3,102,891
Alberta	3,259,090	4,012,890	14,889,308	724,360	42,762,207	7,305,356
British Columbia	—	—	18,033,489	2,310,172	12,200,082	2,690,002
Yukon Territory	—	—	1,322,327	361,829	—	—
Northwest Territories	—	—	4,237,095	979,633	—	—
Canada, 1970	15,199,471	95,276,528	408,911,792	31,165,645	70,725,852	13,436,608
1971						
Newfoundland	—	—	19,818,595	2,135,908	—	—
Prince Edward Island	—	—	22,108,564	2,079,466	—	—
Nova Scotia	759,253	8,594,614	136,202,144	7,851,207	—	—
New Brunswick	299,188	2,431,327	152,252,229	11,316,188	—	—
Quebec	—	—	31,248,813	2,731,622	—	—
Ontario	9,435,911	99,980,651	25,926,085	3,852,710	8,924,957	4,817,124
Manitoba	492,263	2,085,303	4,719,648	795,911	992,547	272,668
Saskatchewan	2,199,887	3,822,377	4,023,447	206,634	15,046,358	3,562,672
Alberta	4,026,906	5,286,222	5,398,333	345,525	41,374,305	7,542,179
British Columbia	—	—	22,351,208	2,905,946	3,994,358	984,648
Yukon Territory	—	—	1,694,835	480,095	—	—
Northwest Territories	—	—	4,700,184	1,208,511	—	—
Canada, 1971	17,213,408	122,200,494	430,444,085	35,909,723	70,332,525	17,179,291

Sources

13.1 Detailed energy supply and demand, 1971. Statistics Canada Cat. No. 57-207.

13.2 Detailed energy supply and demand in Canada, 1958-1969. Statistics Canada Cat. No. 57-505.

13.3 - 13.4 Mineral Resources Branch, Department of Energy, Mines and Resources.

13.5 - 13.7 Manufacturing and Primary Industries Division, Industry Statistics Branch, Statistics Canada.

13.8 Energy Development Sector, Department of Energy, Mines and Resources.

13.9 - 13.20 Manufacturing and Primary Industries Division, Industry Statistics Branch, Statistics Canada.

Chapter 14

Housing and construction

14.1 Housing

14.1.1 Government aid to housing

14.1.1.1 Federal assistance

The role of the federal government in housing has expanded progressively since the introduction of the first continuing statute in 1935. Although the government originally entered the housing field in 1918 when it made money available to the provinces for re-lending to municipalities for housing purposes, the first general piece of federal housing legislation was the Dominion Housing Act passed in 1935. This was followed by the National Housing Acts of 1938 and 1944, culminating in 1954 with the present National Housing Act, defined as “an Act to promote the construction of new houses, the repair and modernization of existing houses and the improvement of housing and living conditions”. Central Mortgage and Housing Corporation (CMHC), a Crown agency incorporated by Act of Parliament in 1945, administers the National Housing Act and co-ordinates the activities of the federal government in housing. The Corporation has the authority and responsibility for a variety of functions affecting housing in its long-term outlook as well as in its immediate requirements. It is empowered to act as an insurer of mortgage loans, as a lender or investor of public funds, as a guarantor and as an owner of property and other assets. It also acts as a research agency in fields associated with housing and assists provinces and municipalities in many aspects of urban growth. In general, the government, through successive Housing Acts, has attempted to stimulate and supplement the market for housing rather than assume direct responsibilities that rightfully belong to other levels of government or that could be borne more effectively by private enterprise. In each case the aim has been to increase the flow of mortgage money and to encourage lenders to make loans on more favourable terms to prospective home-owners. Close to half of the country’s present stock of approximately 6 million dwelling units have been built since the first covering legislation was enacted; about one third of these were financed in one way or another under the Housing Acts.

Under the terms of the National Housing Act, 1954 and its subsequent amendments, as now set out in RSC 1970, c.N-10, the federal government makes available the following assistance.

Insured loans. Insured mortgage loans may be made for both home-ownership and for rental housing. They are normally available from approved lenders to individual home-owner applicants, to builders constructing houses for sale or for rent and for some special groups, such as co-operative housing associations and farmers. Insured loans are also available for the purchase, improvement, refinancing or sale of existing dwellings. The conditions governing the making of NHA loans are contained in National Housing Loan Regulations.

Upon application, the borrower pays CMHC a fee of \$35 per unit to help defray expenses incurred in the examination of plans and specifications, in the determination of lending values and in compliance inspections during construction. An approved lender requires evidence that a home-owner or home-purchaser is providing 5% of the value of the house from his own resources. For the home-owner this equity may be in the form of cash or a combination of cash, land and labour; for the home-purchaser it may be in cash or labour. The regulations require that gross debt service — the ratio of repayments of principal and interest plus municipal taxes to the income of the borrower — should not exceed 27%, although instances involving higher ratios may be considered on their merits. The borrower pays an insurance fee which is added to the amount of the loan and is repaid over the term of the mortgage; the fee ranges from ⅞% to 1¼% of the loan, according to type of unit and timing of mortgage advances. The NHA interest rate is free to find its own level in relation to the open market.

The loan ratio for new housing, including that for condominium tenure, may be for up to 95% of value. For open market rental accommodation the ratio may be up to 90%. Loan maximums vary with the type of rental housing but cannot exceed those for similar dwellings built for ownership. Current (1972) maximums are: single family units, \$30,000; apartment multiple units, \$23,000; and hostels, \$10,000 per person accommodated. Loans for the

purchase of existing housing may be up to 95% of value. Maximums for single, semi-detached and row housing are \$23,000 per unit. These loans are not available for rental housing or for the purchase of buildings containing three or more housing units. The period of repayment may be up to 40 years for new home-ownership and rental housing. For existing housing this period is 40 years or the remaining life of the building, whichever is the lesser.

Direct loans. CMHC may make direct loans for both home-ownership and rental housing where, in the opinion of the Corporation, loans are not available through approved lenders. Loans are made to any eligible home-owner applicant but direct loans to builders are normally subject to a requirement that the houses be pre-sold to satisfactory purchasers. In 1971, private funds made available for mortgage loans were about double the level for 1970. The resulting decreased demand for CMHC direct loans produced a drop of 47% in federal aid to new construction in the private market and an increase in federal funds for the financing of lower-cost housing.

CMHC may make loans to any organization, corporation or individual to assist in financing the construction of low-rental housing projects or in the purchase of existing buildings and their conversion into low-rental housing projects. In addition to self-contained units, developments may include hostel or dormitory accommodation for elderly and low-income individuals. Loans may be up to a maximum of 95% of the lending value established by CMHC. The period for repayment may not exceed the useful life of the project and in any case may not be for more than 50 years; the interest rate is established by Order in Council. Plans and specifications for such projects as well as financing and operating arrangements must be approved by the Corporation.

Since December 1960, the National Housing Act has made funds available to assist in the elimination or prevention of water and soil pollution. CMHC is authorized to make a loan to a province, municipality or a municipal sewerage corporation to construct or expand sewage treatment facilities. The loan may not exceed two thirds of the cost of the project and the maximum repayment term is 50 years from date of completion. Interest is at a rate fixed by the Governor in Council. Agreements covering such projects contain a "forgiveness" clause applicable to both the principal of the loan and accrued interest conditional on satisfactory completion by March 31, 1975. If construction is not complete by that date, 25% of the loan advanced or warrantable by construction progress, plus 25% of the accrued interest on advances, may be forgiven.

Long-term loans are available to a province or its agency, a municipality or its agency, a hospital, school board, university or college, co-operative association or charitable corporation for construction of student housing projects, or to acquire existing buildings and convert them into student residences. In all cases, the government of the province concerned must approve the loan. CMHC may lend up to 90% of the project cost, subject to maximum amounts as follows: \$30,000 per new unit; \$23,000 per self-contained unit or existing housing unit; and \$8,000 per student housed in dormitory or hostel accommodation. The term of the loan may not exceed 50 years or the existing life of the building, whichever is less. The interest rate is prescribed by the Governor in Council.

Home improvement loans. CMHC is authorized to give a limited guarantee to banks or approved instalment credit agencies in return for an insurance fee paid by the borrower on loans made for additions, repairs and alterations to existing houses and apartments. A home improvement loan and the balance owing on any existing NHA home improvement loan on the property may not exceed \$4,000 for a one-family dwelling or \$4,000 for the first unit of a duplex, semi-detached or multiple-family dwelling, plus \$1,500 for each additional unit. Loans are repayable in monthly instalments over a period not exceeding ten years. The maximum rate of interest is restricted to $2\frac{1}{4}\%$ above the long-term government bond rate adjusted quarterly to the nearest one eighth of 1%.

Public housing. Under the National Housing Act and complementary provincial legislation, the federal and provincial governments may enter into partnership agreements to build rental housing for families and individuals of low income or to purchase and rehabilitate existing housing for this purpose; hostel or dormitory accommodation, in addition to self-contained units, may be included. The federal government pays up to 75% of the capital costs and the provincial government the remainder, although the latter may call upon the municipality concerned to bear a portion of the provincial share. Rents for units in federal-provincial

projects are related to the tenant's family income and size of family. Operating deficits are shared on the same contractual basis as the capital costs.

As an alternative, CMHC may make long-term loans to a province, or to a municipality or public housing agency with the approval of the province, to provide public housing accommodation. Projects may consist of new construction or existing buildings and include dormitory and hostel accommodation as well as self-contained family units. Loans may be up to 90% of the total cost as determined by CMHC and for a term as long as 50 years but not in excess of the useful life of the development. The maximum that may be borrowed for a fully serviced apartment is \$20,000, and for hostels \$10,000 for each person accommodated. For a house, the maximum is \$30,000. The interest rate is set by the Governor in Council. Where this alternative is selected, federal grants may be made covering up to 50% of losses incurred in the operation of public housing projects, for a period of up to 50 years but not exceeding the useful life of the project. Annual subsidies are shared by CMHC and the province concerned.

Urban renewal. Federal grants and loans are available under the Act for provinces and municipalities undertaking programs of urban renewal. CMHC, with federal government approval, may arrange with a municipality to undertake a study to identify blighted areas, determine housing requirements and provide data upon which an orderly program of conservation, rehabilitation and re-development can be based. The federal contribution may be as much as 75% of the cost. The legislation also authorizes federal contributions equal to one half of the costs of preparing an urban renewal scheme setting out proposals for urban renewal action, a similar cost-sharing arrangement for the implementation of a scheme, and loans up to two thirds of the provincial or municipal share of the cost of carrying out an urban renewal scheme. Loans may be for 15 years at an interest rate prescribed by the Governor in Council. To encourage the improvement and conservation of housing meeting minimum standards of construction, loans are available for the sale, purchase or refinancing of existing housing in urban renewal areas not designated for demolition. Since August 1969 activity under the urban renewal provisions of the National Housing Act has been restricted to prior commitments only.

Land assembly. The federal and provincial governments may enter into an agreement to provide for a land assembly project which involves the development of raw land for housing purposes. The federal government pays up to 75% of the cost and the provincial government the remainder. The latter may call upon the municipality concerned to bear a portion of the provincial share. In addition, loans equal to 90% of the cost of assembling and servicing land for public housing purposes are available at a preferential interest rate to provinces, municipalities and their agencies.

CMHC building. The Corporation may construct and administer housing and certain other buildings on its own account and for other government departments and agencies. Its responsibilities include the provision of architectural and engineering designs, the calling of public tenders and the administration of construction contracts – including any necessary on-site surveying and engineering. On such contracts, the Corporation carries out full architectural and engineering inspections.

Research. CMHC is concerned with building technology in the formulation of standards for housing construction, in the use of suitable materials and in the development of new building techniques. The Corporation has no laboratory facilities but has direct experience of performance in the field and seeks the advice of specialists in various agencies and departments of the federal government in such matters. Research into the factors affecting housing is concerned with the measurement of the demand for new housing, the volume of new housing built and the supply of mortgage money for house construction. The Corporation also co-ordinates and publishes statistical information on housing. Funds provided under the National Housing Act support the activities of the Canadian Housing Design Council, the Community Planning Association of Canada and the Canadian Council on Urban and Regional Research.

Other federal legislation. The Farm Credit Act, providing for federal long-term loan assistance for housing as well as for other farm purposes, and the Farm Improvement Loans Act, providing for guarantees for intermediate- and short-term loans made by approved lending agencies to farmers for housing and other purposes, are described in greater detail in Chapter 11. The Veterans' Land Act, which provides a form of loan and grant assistance to

veterans for housing and other purposes, is dealt with in Chapter 6. These three statutes are concerned only incidentally with housing.

14.1.1.2 Provincial assistance

All provinces have complementary legislation providing for joint federal-provincial housing and land assembly projects and, in addition, most provinces have enacted separate legislation with respect to housing. Details are available from the respective provincial government departments.

14.1.2 Housing activity 1970-71

Studies of urban, suburban and rural growth rates conducted during the late 1960s indicated that, in order to meet Canada's minimum housing need to the end of 1974, a total of 200,000 new units per year for the five-year period 1970-74 would be required. By the end of 1972 approximately 675,000 housing starts had been made in all areas of the country, roughly two thirds of the goal.

Although dwelling starts in 1970, at 190,528, were 9.5% below the record of 210,415 of the previous year, in 1971 the trend reversed, with mortgage loans by conventional and NHA-approved lenders increasing by 38% and 77%, respectively, and dwelling starts increasing 22.6% to a total of 233,653 (Tables 14.1 and 14.2). In 1972, the rising trend continued with dwelling starts rising to 249,914. Conventional loan totals for 1970 and 1971 were \$1,182.8 million and \$1,963 million representing 99,826 and 146,977 dwellings, respectively.

Approved lenders' investment in 1970 for new and existing housing amounted to \$894.6 million, representing 56,280 dwellings and hostel accommodation for 2,830 persons. In 1971, this activity doubled to an investment of \$1,807.2 million for 111,914 units and 3,882 hostel beds.

Direct federal support during 1970 involved 68,178 new and 7,910 existing units for a total of 76,088. Hostel accommodation was provided for 13,093 persons. All hostel accommodation and 47,000 of the dwelling units were for low-income families or individuals. The total federal investment in housing for the year was \$965.5 million. Comparable figures for 1971 involved 53,013 new and existing units and 9,034 hostel beds with loan and capital commitments of \$748.3 million. About 83% of direct lending in 1971 was allocated for low-income housing compared to 72% in 1970.

The average cost of both single-family dwellings and apartment units dropped slightly in 1970 from 1969 as a result of a decrease in construction cost factors. The land-cost element, however, has continued its rise over both years with the result that 1971 total housing costs, including land, averaged \$20,528 for single-family dwellings and \$14,237 for apartment units compared to \$19,915 and \$13,810 in 1970.

Operations under the National Housing Act. NHA mortgage loans amounting to \$2,266.2 million were approved in 1971 for the provision of 145,042 new dwellings and 11,700 hostel beds, compared with loans of \$1,720.1 million approved for 116,294 new units and 12,610 hostel beds in 1970. In 1971, direct lending by CMHC accounted for \$676.2 million representing 47,395 units and 7,818 hostel beds; approved lenders financed 97,647 units and 3,882 beds through mortgage loans aggregating \$1,589.9 million. Comparable figures for 1970 were: CMHC, \$903.4 million for 65,358 units and 9,780 hostel beds; approved lenders, \$816.6 million for 50,936 units and 2,830 beds.

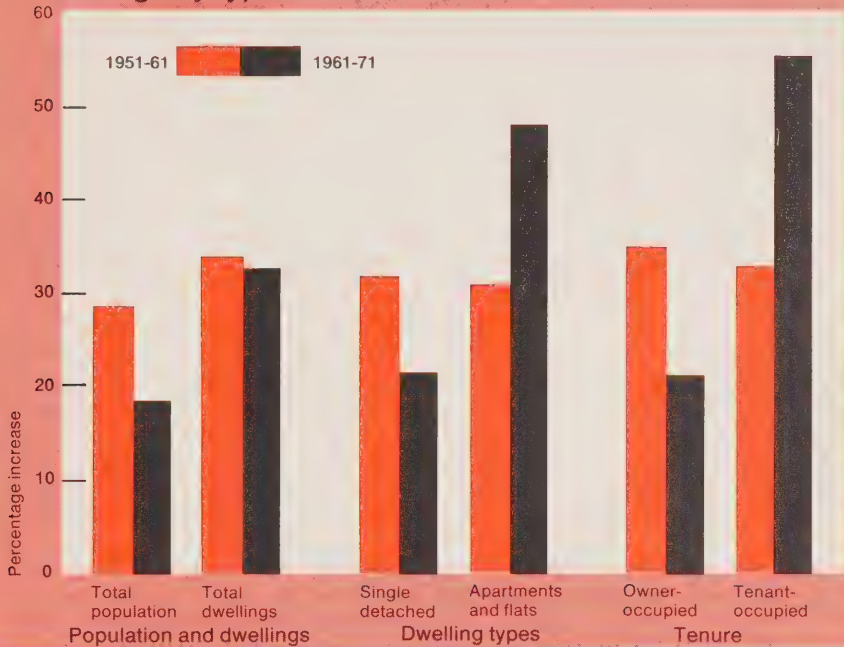
Chartered banks, with a gross investment of \$694 million were the most active of the approved lenders, followed by trust companies at \$413.5 million. Life insurance companies had an investment of \$184.5 million with loan and other agencies totalling \$323.9 million.

Conventional financing of new and existing residential construction in 1971 grossed \$1,963 million for 146,977 units, compared to \$1,182.8 million for 99,826 units in 1970.

Borrower and house characteristics. The average family income of purchasers of NHA-financed houses in 1971 was \$12,005. These incomes were 1.5% higher than the corresponding averages for purchasers in 1970, appearing to be in line with the general increase in incomes in 1971. As in previous years, relatively few purchasers of NHA houses (10.7% in 1971 and 5.3% in 1970) were drawn from the lower third of the range of family incomes.

The average age of purchasers of NHA houses was 32.7 years in 1971 compared to 33.2 in 1970. In 1971, just over one half of the purchasers had two or more children and 24.7% had previously been home-owners.

Percentage increases in total population and dwellings by type and tenure, 1951-1971



The average price of NHA-financed single-family dwellings purchased in 1971, including many started in the previous year, was \$22,181. On these houses, purchasers provided down payments averaging \$3,917. Compared with 1970, these payments represented an increase of 1.3% in price and a decrease of 6.8% in down payment.

As in other years, most of the NHA-financed single detached houses purchased in 1971 were bungalows, representing 69.7% of the total compared with 74.7% in 1970. The proportion of split-level dwellings increased from 18.9% to 24.0%. Two-storey dwellings remained steady at 5.7%. Of these dwellings, about 86.9% had one to three bedrooms and the remainder had four or more.

Aid to low-income groups. In 1971, loans amounting to a total of \$645.8 million were approved to assist in the construction of 45,508 self-contained units of low-rental housing and hostel accommodation for 8,880 persons.

Home-improvement loans. The value of NHA-guaranteed bank loans for home-improvement purposes in 1971 was \$19 million, bringing the total insurance or guarantee in force to \$22.8 million by the end of the year. In 1970, loans totalling \$16.9 million were approved and the guarantee level on December 31, 1970, stood at \$22.3 million. At the end of 1971, the Home Improvement Loan Insurance Fund reserve was \$3.7 million, only slightly higher than in the previous year. The chartered banks reported the outstanding debt on all home-improvement loans as \$51 million in 1970 and \$45.6 million in 1971.

Loans for student housing projects. Loans totalling \$23.4 million were approved in 1971 for 14 student housing projects, involving the construction of 732 self-contained units to provide 2,483 new hostel beds, and acquisition and conversion of existing buildings to provide a further 70 beds (Table 14.3). Comparable figures for 1970 are \$35.7 million for 20 projects to provide 588 new units, 4,553 hostel beds and purchase and conversion of existing buildings to provide an additional ten beds.

From December 1960, when student housing loans were first authorized, to December 1971, 278 loans totalling \$420.6 million were approved involving the construction of 6,105

units and 64,022 beds, and the acquisition and conversion of existing buildings to provide 256 units and 2,785 beds.

Loans for municipal sewage-treatment projects. During 1971, 199 loans amounting to \$66.7 million were authorized to assist municipalities to undertake sewage-treatment projects: one in Newfoundland, amounting to \$97,000; three in Prince Edward Island, \$1.9 million; 21 in Nova Scotia, \$3.3 million; nine in New Brunswick, \$1.7 million; 21 in Quebec, \$4.7 million; 75 in Ontario, \$24.7 million; nine in Manitoba, \$2.9 million; five in Saskatchewan, \$263,000; 22 in Alberta, \$3.8 million; and 33 in British Columbia, \$23.3 million. From December 1960, when assistance for sewage-treatment projects was authorized, to December 1971, 1,925 loans totalling \$463 million were approved.

Mortgage marketing. Sales of NHA-insured mortgages by approved lenders amounted to \$62.7 million in 1971. In the same year, CMHC sold two blocks of agency loans totalling \$21.4 million to the approved lenders who had originated these loans on the Corporation's behalf in 1957-58. Total CMHC sales to the end of 1971 amounted to \$330 million.

Urban renewal. Urban renewal limitations, begun in 1969, continued during 1971. No new studies or scheme preparations were initiated. Implementation of 16 projects supported by federal grants of \$38.3 million and loans totalling \$15 million, was approved during the year. Of the 16 projects approved, 11 were in Quebec, one each in Newfoundland and Ontario, and three in British Columbia.

Subsidized public housing. During 1971, a total of 55 federal-provincial partnership agreements were approved to provide 2,120 new and existing dwellings. The total federal share of the cost was 75%, amounting to \$28.1 million. Comparable figures for 1970 were 31 agreements, 2,176 units, 154 hostel beds and contributions of \$25.3 million. Loan assistance for public housing totalled \$271.6 million in 1971 as against \$220.3 million in 1970. These amounts produced 19,360 units and hostel accommodation for 700 persons in 1971 compared to 17,803 units in 1970. Public housing subsidies borne by the federal government approximated \$17.2 million in 1970 and \$29.8 million in 1971.

Co-operative house-building. Under arrangements with Nova Scotia, New Brunswick and Prince Edward Island, assistance may be given for the co-operative building of houses. In 1970 and 1971 the total number of units approved for construction was 592 and 693, respectively, distributed as follows: Nova Scotia, 512 and 622; New Brunswick, 13 and 6; and Prince Edward Island, 67 and 65. The total in federal funds involved was \$5.3 million in 1970 and \$6.4 million in 1971.

Housing in northern areas. Special agreements exist between the federal government and the governments of Manitoba, Saskatchewan and Alberta for housing people in remote northern areas. In 1971, a total of 50 units was provided in Manitoba with loan support of \$349,000, and 23 in Saskatchewan with loans totalling \$99,000. Comparable figures for 1970 are: Manitoba, 50 units and \$431,000; and Saskatchewan, 34 units and \$188,000. To the end of 1971, Alberta had not used these provisions. Purchasers of these houses are predominantly Indians or Métis.

Land assembly. Under federal-provincial cost-sharing agreements, 11 land assembly projects were approved in 1971 involving development of 1,696 residential lots and federal contributions of \$12.8 million. In 1970 four projects were undertaken for 425 lots and \$5.1 million. A total of 27 loans aggregating \$5.9 million were approved in 1971 for the development of 122 acres compared to \$15.1 million for 2,202 acres in 1970.

14.2 Dwellings and household facilities

Over the past 30 years, decennial censuses of Canada have included a comprehensive inventory of the nation's dwelling stock in the form of a complete housing census taken in conjunction with the censuses of population and agriculture. Detailed information on this subject covering the 1941-71 period may be found in the relevant census volumes and reports. Summary data from the 1971 Census included here relate to basic characteristics available at the end of December 1972 (i.e., tenure, type of dwelling, number of rooms, bath and toilet facilities and running water). More detailed information on these particular housing characteristics, and on others such as home values and rents, household conveniences and mortgages, that may be available later may be obtained from the User Inquiry Service of the Data Dissemination Section, Census Branch, Statistics Canada.

14.2.1 Recent trends

The 1971 Census recorded a total of 6 million occupied dwellings in Canada. (A dwelling, for census purposes, is a structurally separate set of living quarters with a private entrance either from outside the building or from a common hall or stairway inside.) This total represented a 32.5% increase in dwellings since the 1961 Census, compared to an increase in population of 18.2%. It is apparent that, despite slower population growth resulting from declining birth rates and lower immigration, the need for dwellings has continued to increase at a rate comparable to the record growth rates of the 1950s. This is attributable largely to the increased rate of family formation as children of the postwar "baby boom" reached working and marriageable age, and to the establishment of increasing numbers of one- and two-person households in both younger and older age groups.

These trends in housing growth rates, including comparisons over the past 20 years for such characteristics as type of dwelling, tenure, number of rooms, and basic household facilities, are summarized in Table 14.4.

14.2.2 Dwelling types, tenure and size

14.2.2.1 Dwelling types

Single detached homes continued to be the predominant type of housing accommodation in Canada in 1971, although their relative numbers have gradually declined in favour of multiple type dwellings. Twenty years earlier, at the 1951 Census, two thirds of all dwellings were single detached, but this ratio gradually dropped to 59.5% by 1971. In the 1961-71 decade, single detached homes increased by 20.6%, whereas multiple type units, i.e., single attached (double and row houses), apartments, flats, etc., have grown at the significantly higher rate of 52.9%.

Table 14.5 shows the distribution of the two broad dwelling types in 1971 by province and by metropolitan area. Saskatchewan had the largest proportion of single detached homes, 81.5% of its occupied dwellings being in this category. Almost 60% of Quebec's dwellings were multiple type units (apartments, single attached, etc.), and only 40% were single detached, by far the lowest proportion among the provinces. The distribution within the major metropolitan centres reflected these provincial ratios in general terms, except that in most cases the proportions of multiple unit dwelling types were considerably higher than for the province as a whole. This was particularly evident in Montreal and Toronto, where only 23.7% and 45.9%, respectively, of all occupied dwellings were single detached homes.

14.2.2.2 Owner and tenant occupancy

The recent trend toward apartment living and higher density accommodation has resulted in a significant increase in the number of tenant-occupied dwellings (from 34.0% of all dwellings in 1961 to 39.7% in 1971), reversing an earlier trend which had seen the rate of home-ownership increase steadily from 56.7% of all homes in 1941 to 66.0% in 1961.

As in the case of dwelling types, there was considerable variation among provinces in the proportions of owner-occupied dwellings in 1971, ranging from a low of 47.4% in Quebec to a high of 80.8% in Newfoundland. Table 14.6 shows that the swing toward tenant occupancy in the 1961-71 period was characteristic of all provinces, and at a fairly uniform rate. However, the trend was less marked in New Brunswick and Quebec where the decline in the percentage of home-owners between 1961 and 1971 was not as sharp as in the other provinces.

Home-ownership is a characteristic which varies greatly between rural and urban areas and is generally in inverse ratio to the size of the community. For example, in the very large urban agglomerations of 500,000 population and over, only 46.1% of all dwellings were owner-occupied in 1971, compared with 63.2% for the urban size-groups under 100,000 population and 82.0% in rural areas. Among the various census metropolitan areas, the eastern centres of Halifax, Saint John, Montreal, Quebec and Ottawa - Hull showed the lowest percentages of home-ownership and the highest tenancy rates.

14.2.2.3 Dwelling size

Despite the high increase in apartment rental accommodation during the 1961-71 decade as compared to owner-occupied single homes, the average size of Canadian dwellings showed a slight increase from 5.3 to 5.4 rooms. Not all provinces followed this pattern, however, and as Table 14.7 shows, there was a decline in the average number of rooms per dwelling in all provinces east of Ontario, with increases in Ontario and throughout the west. Throughout the nation as a whole, Prince Edward Island had the highest average in 1971 at 6.1 rooms per

dwelling, and the Yukon Territory and Northwest Territories the lowest at 4.3. A "crowded" dwelling, for census purposes, is considered to be any dwelling in which the number of persons exceeds the number of rooms. Using this rough measure, the number of crowded dwellings decreased by 24.2% in the decade between 1961 and 1971. Perhaps even more significant is the fact that crowded dwellings fell from 16.5% of the total housing stock in 1961 to only 9.4% in 1971. This dramatic improvement, which was only slightly apparent in the 1951-61 period, appears to result from both a decline in the average number of persons per household and an increase in the average number of rooms per dwelling, with the former likely exerting the greater influence.

Provincially, the smallest proportions of crowded dwellings in relation to total housing stock were in Ontario and British Columbia, where only 6.8% of all dwellings had less than one room per person in 1971. The relatively largest proportions were in the Atlantic Provinces and Quebec, ranging from 12.4% in Nova Scotia and Quebec to 23.6% in Newfoundland.

14.2.3 Household facilities and equipment

14.2.3.1 Census data

Decennial censuses provide an inventory of a variety of household facilities and equipment to measure advances in living standards and to provide data for market research. The 1971 Census covered items such as plumbing and sanitary facilities, heating equipment and fuel, and accessories such as refrigerators, freezers, dishwashers, clothes dryers and television sets. Data on the first of these subjects, i.e., the incidence of homes with running water, bath and toilet facilities, are shown by province in Table 14.8.

Continuing the rising trend in recent decades, there was again a marked improvement in the number of dwellings equipped with plumbing and sanitary facilities during the 1961-71 period. Dwellings with running water increased from 89.1% of all dwellings in 1961 to 96.0% in 1971. Similarly, households reporting a bath or shower for their exclusive use advanced from 77.1% to 90.9%, and households with exclusive use of a flush toilet from 79.0% to 93.3%.

Although nine of every ten Canadian dwellings were supplied with these amenities in 1971, in rural localities the ratios were considerably lower than the national percentages. Table 14.8 shows that in rural areas of the Prairie Provinces, for example, one of every three dwellings still lacked running water and installed bath or shower facilities, and closer to one of every two lacked a flush toilet. Rural Newfoundland showed similar ratios, but in the Yukon Territory and Northwest Territories only about one rural dwelling in every three was equipped with these facilities.

14.2.3.2 Annual estimates

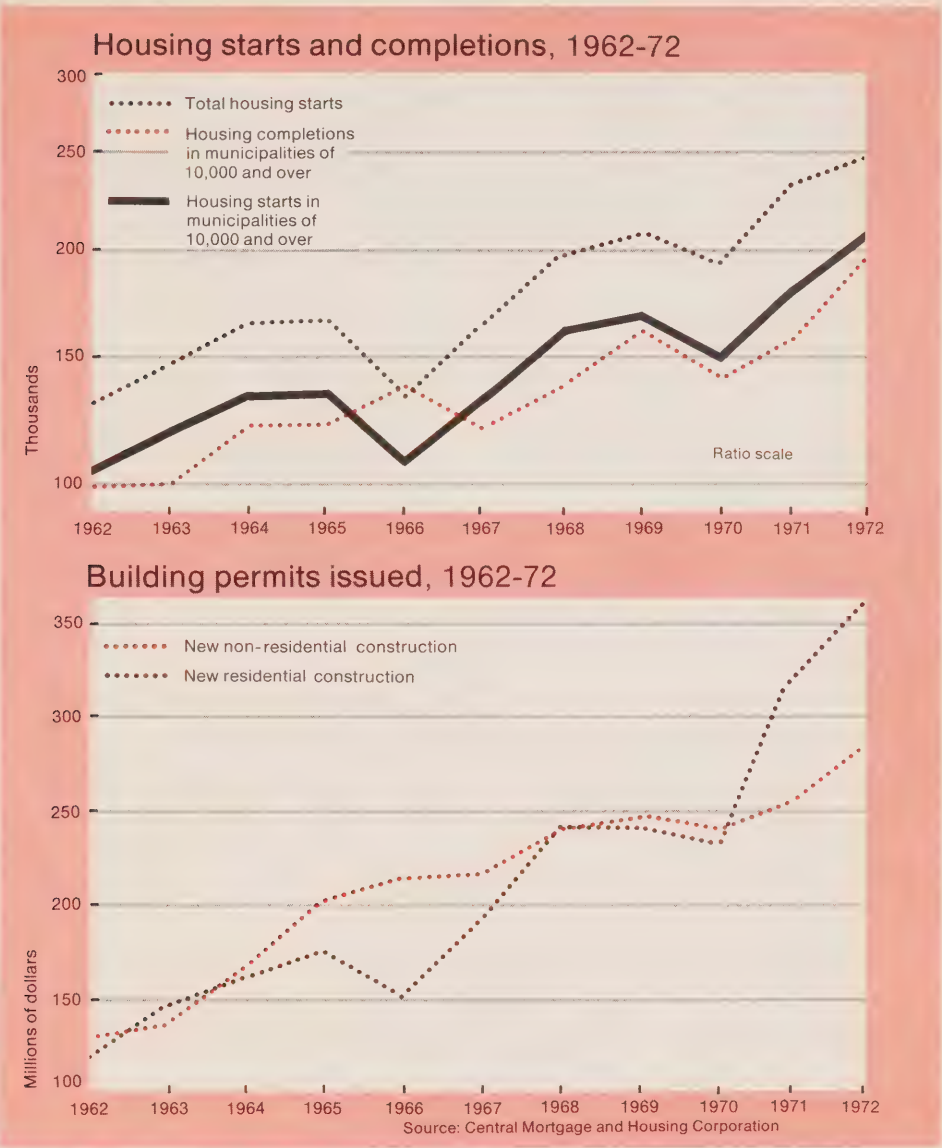
Table 14.9 presents some summary statistics derived from the latest in a series of annual sample surveys conducted by Statistics Canada. The survey was carried out in conjunction with the May 1972 labour force survey and about 30,000 households, chosen by area sampling methods, were included in the sample. Unlike decennial censuses, the sample survey cannot produce data for the smaller localities and areas, but much of the information shown in Table 14.9 for Canada is available also by individual provinces and metropolitan areas. Moreover, a much wider range of household facility and equipment items is covered in the annual survey than can be accommodated in a general census.

Table 14.9 shows that possession of colour television sets and FM radios by Canadian households increased more than any other item of equipment between May 1971 and May 1972. Households with colour TV sets increased to 24.2% of the total from 18.4%, and 62.4% had FM radios compared to 57.6% a year earlier. In 1972, data were collected for the first time on adult-size bicycles, 27.9%; pianos, 13.3%; portable humidifiers, 13.4%; and snow blowers, 4.6%. At the other end of the scale, several items of equipment now appear to be present in almost all Canadian households: electric refrigerators were reported in 98.7%; telephones in 94.6%; radios in 97.6%; and TV sets in 95.8%.

14.3 Construction

14.3.1 Value of construction work

The data on the construction industry represent the estimated total value of all new and repair construction performed by contractors and by the labour forces of utility, manufacturing, mining and logging firms, government departments, home-owner builders and other persons or firms not primarily engaged in the construction industry. Table 14.10



shows the value of new and repair construction work and Table 14.11 the value of such work performed by contractors and others during the period 1968-70, preliminary expenditures for 1971 and intentions for 1972. Table 14.12 gives estimates of total expenditures in Canada on each type of construction for which information is available.

Principal statistics of the construction industry are shown by province and for contractors, utilities, governments and others in Table 14.13. The statistics given for Canada as a whole may be considered as relatively accurate but those for individual provinces and by class of builder are approximations only. All estimates given for cost of materials used are based on ratios of this item to total value of work performed, derived from annual surveys of construction work performed by contractors and others, and applied to the total value-of-work figures. Estimates of labour content are similarly based but, in addition, are adjusted to include working owners and partners and their withdrawals. Although the ratios were calculated in some detail by type of industry, still further refinements are required. There are also some

difficulties in obtaining the precise location of projects undertaken or to be undertaken by large companies operating in a number of provinces. However, if used with these qualifications in mind, the Table provides useful estimates.

Price index numbers of construction and capital goods may be found in Chapter 21 which measure price changes in residential and non-residential building materials and changes in construction wage rates; price indexes of highway construction which show annual costs to provincial governments in contracts awarded for highway construction as a percentage of prices paid in 1961; and price indexes of electrical utility construction (distribution systems, transmission lines, transformer stations) which provide an estimate of the impact of price change on the cost of materials, labour and equipment used in constructing and equipping such utilities.

14.3.2 Building permits issued

The estimated value of proposed construction is indicated by the value of building permits issued. Figures of building permits are collected from approximately 1,500 municipalities across the country and are available for individual municipalities, for metropolitan areas, for provinces and for economic areas in Quebec, Ontario and Manitoba.

The total value of permits issued for building construction in 1972 was \$6,409.3 million, a figure 12.2% higher than in 1971. Residential construction value and over-all non-residential construction value increased by 12.7% and 11.6%, respectively, reflecting an increase of 9.8% in the industrial, 30.4% in the commercial, and a decrease of 8.2% in the institutional and government construction sectors.

Permit values rose in all provinces except Prince Edward Island and Saskatchewan, which showed a slight decrease. The value of building permits issued in each province in the years 1971 and 1972 is given in Table 14.14, in each of 50 municipalities in Table 14.15 and in each of the 19 metropolitan areas in Table 14.16. The latter made up 65.2% of the 1972 total for Canada.

14.4 Capital expenditures

A survey carried out early in 1972 of capital spending intentions of all sectors of the Canadian economy indicated that capital outlays amounting to \$20,800 million were planned for 1972. The survey covered business establishments, institutions and all levels of government, and the total also included an estimate of outlays on new housing. The capital program anticipated for 1972 exceeded by about \$1,000 million or nearly 5%, the \$19,800 million spent for capital purposes in 1971. Within the total, outlays for new construction are expected to rise by about 4% and those for new machinery and equipment by about 6% from 1971 levels.

The planned 5% increase in capital expenditures in 1972 follows a year in which such outlays rose by 11%. Viewed within a longer term perspective, the indication is that the rate of growth in capital spending in 1971 was unusually high. Over the past decade, the average year-to-year growth rate in such spending was about 7%. If allowance is made for the usual build-up of investment plans from intentions as stated at the beginning of the year, present plans suggest that the 1972 growth in capital outlays will approximate this longer term norm.

Table 14.17 shows the trend in capital spending over the years 1961-72 in both current and constant (1961) dollars. Table 14.18 gives a summary of capital and repair expenditures by economic sector for 1970-72 and Table 14.19 contains details of the manufacturing, mining and utilities sectors.

A summary of the capital expenditures in each province for the years 1970-72 is given in Table 14.20. Such expenditures represent gross additions to the capital stock of the province and are a reflection of economic activity in the area, although the actual production of these assets may generate major employment and income-giving effects in other regions. For example, the spending of millions of dollars on plants and equipment in western Canada may generate considerable activity in machinery industries in Ontario and Quebec as well as construction activity in the western provinces.

Sources

14.1 Central Mortgage and Housing Corporation.

14.2 Population and Housing Sub-division, Census Branch, Statistics Canada.

14.3 - 14.4 Construction Division, Industry Statistics Branch, Statistics Canada.

Tables

.. not available
 ... not appropriate or not applicable
 — nil or zero
 — too small to be expressed

e estimate
 p preliminary
 r revised
 certain tables may not add due to rounding

14.1 Dwelling units¹ started and completed, by type of financing, 1970-72, and by region, 1971 and 1972

Year and region	Dwelling units started		Conven- tional lenders loans	All other financing	Total	Dwelling units completed
	National Housing Act CMHC loans	Approved lenders loans				
1970	56,941	49,612	40,255	43,720	190,528	175,827
1971	41,442	87,802	55,625	48,784	233,653	201,232
1972	36,939	96,033	..	..	249,914	232,227
1971						
Atlantic Provinces	3,462	1,811	4,888	7,098	17,259	14,139
Quebec	12,119	17,903	11,351	10,409	51,782	48,783
Ontario	14,902	39,532	21,343	14,203	89,980	74,149
Prairie Provinces	8,457	18,939	7,619	4,852	39,867	33,683
British Columbia	2,502	9,617	10,424	12,222	34,765	30,478
1972						
Atlantic Provinces	3,831	1,991	..	..	16,502	15,000
Quebec	8,688	22,234	..	..	55,746	53,466
Ontario	13,153	43,970	..	..	102,933	96,438
Prairie Provinces	8,748	18,703	..	..	39,416	36,226
British Columbia	2,519	9,135	..	..	35,317	31,097

¹ Excludes Yukon Territory and Northwest Territories.

14.2 Dwelling units started in metropolitan and major urban areas, 1970 and 1971

Area (1966 Census)	Dwelling units started				Row	Apartment; other
	1970	1971	Total	Single de- tached			Semi- de- tached and duplex
METROPOLITAN AREAS						
Calgary	6,740	8,801	3,441	592	1,274	3,494
Edmonton	6,330	11,286	3,154	168	1,440	6,524
Halifax	2,343	2,551	551	138	276	1,586
Hamilton	4,545	5,408	2,155	260	750	2,243
Kitchener	3,075	3,905	1,323	488	620	1,474
London	2,738	5,192	1,339	257	641	2,955
Montreal	23,017	22,285	5,293	996	1,025	14,971
Ottawa-Hull	11,345	11,141	2,725	396	1,234	6,786
Quebec	6,421	8,274	2,696	174	300	5,104
Regina	418	1,307	879	32	29	367
Saint John	498	1,048	382	62	60	544
St. John's	679	1,222	639	188	159	236
Saskatoon	259	498	498	—	—	—
Sudbury	1,961	3,761	1,268	226	242	2,025
Toronto	30,521	33,163	6,245	3,510	2,218	21,190
Vancouver	13,437	15,553	5,283	391	1,057	8,822
Victoria	2,559	3,102	998	36	113	1,955
Windsor	1,956	2,214	853	132	500	729
Winnipeg	6,661	7,726	2,129	666	696	4,235
Total, metropolitan areas	125,503	148,437	41,851	8,712	12,634	85,240
MAJOR URBAN AREAS						
Brampton	1,902	2,046	727	160	359	800
Brantford	653	527	195	18	—	314
Chicoutimi-Jonquière	860	791	523	40	—	228
Drummondville	222	269	143	6	—	120
Guelph	959	1,448	282	2	383	781
Kingston	827	1,243	583	52	39	569
Moncton	377	997	445	138	48	366
Niagara Falls	449	661	333	56	30	242
Oshawa	1,302	1,571	578	381	—	612
Peterborough	507	485	261	6	52	166
St. Catharines	1,098	1,633	807	122	15	689
St-Jean	159	296	183	6	6	101
St-Jérôme	392	350	184	40	—	126
Sarnia	323	596	201	52	22	321
Sault Ste. Marie	427	679	480	26	—	173
Shawinigan	149	147	131	6	—	10
Sherbrooke	964	1,165	223	74	—	868
Sydney-Glace Bay	362	348	300	30	18	—
Thunder Bay	722	515	275	129	35	76

14.2 Dwelling units started in metropolitan and major urban areas, 1970 and 1971 (concluded)

Area (1966 Census)	Dwelling units started					Row	Apartment; other
	1970	1971	Total	Single de- tached	Semi- de- tached and duplex		
MAJOR URBAN AREAS (concluded)							
Timmins	189	235	119	12	—	104	
Trois-Rivières	1,039	1,121	606	20	52	443	
Valleyfield	111	216	187	6	—	23	
Welland	263	520	325	12	—	183	
Total, major urban areas	14,256	17,859	8,091	1,394	1,059	7,315	
All other	50,769	67,357	48,114	3,645	1,966	13,632	
Canada ¹	190,528	233,653	98,056	13,751	15,659	106,187	

¹ Excludes Yukon Territory and Northwest Territories.

14.3 Loans approved for student housing projects, by province, 1971

Province	New construction				Conversions				Total ¹			
	Loans No.	Units No.	Hostel beds No.	Amount \$'000	Loans No.	Units No.	Hostel beds No.	Amount \$'000	Loans No.	Units No.	Hostel beds No.	Amount \$'000
Newfoundland	—	—	—	—	1	—	15	49	1	—	15	49
New Brunswick	—	—	—	—	2	—	55	144	2	—	55	144
Ontario	6	315	1,525	12,964	—	—	—	—	6	315	1,525	12,964
Manitoba	1	192	—	1,989	—	—	—	—	1	192	—	1,989
Saskatchewan	1	—	406	2,135	—	—	—	—	1	—	406	2,135
Alberta	2	58	500	3,603	—	—	—	—	2	58	500	3,603
British Columbia	2	4	581	3,919	—	—	—	—	2	4	581	3,919
Canada ²												
Gross	12	569	3,012	24,610	3	—	70	193	15	569	3,082	24,803
Net	11	732	2,483	23,146	3	—	70	207	14	732	2,553	23,353

¹ Provincial data are gross.² No loans were approved for student housing projects in Prince Edward Island, Nova Scotia, Quebec, Yukon Territory or Northwest Territories.

14.4 Summary of housing characteristics, Censuses of 1951, 1961 and 1971

Item		1951 ¹		1961		1971		Percentage increase	
		No.	%	No.	%	No.	%	1951-61	1961-71
Total occupied dwellings		No.	%	No.	%	No.	%		
		3,409,295	100.0	4,554,493	100.0	6,034,510	100.0	33.6	32.5
TYPE OF DWELLING²									
Single detached		No.	%	No.	%	No.	%		
		2,275,615	66.7	2,978,501	65.4	3,591,770	59.5	30.9	20.6
Single attached		No.	%	No.	%	No.	%		
		237,655	7.0	404,933	8.9	679,590	11.3	70.4	67.8
Apartments and flats		No.	%	No.	%	No.	%		
		885,565	26.0	1,151,098	25.3	1,699,045	28.1	30.0	47.6
TENURE									
Owner-occupied		No.	%	No.	%	No.	%		
		2,236,955	65.6	3,005,587	66.0	3,636,925	60.3	34.4	21.0
Tenant-occupied		No.	%	No.	%	No.	%		
		1,172,340	34.4	1,548,906	34.0	2,397,585	39.7	32.1	54.8
DWELLINGS WITH:									
Running water		No.	%	No.	%	No.	%		
		2,523,605	74.0	4,058,313	89.1	5,794,470	96.0	60.8	42.8
Bath or shower (exclusive use)		No.	%	No.	%	No.	%		
		1,938,095	56.8	3,512,110	77.1	5,486,395	90.9	81.2	56.2
Flush toilet (exclusive use)		No.	%	No.	%	No.	%		
		2,187,025	64.1	3,599,468	79.0	5,627,445	93.3	64.6	56.3
Average rooms per dwelling		No.		No.		No.			
		5.3		5.3		5.4		...	...
Crowded dwellings ³		No.	%	No.	%	No.	%		
		641,820	18.8	750,942	16.5	569,495	9.4	17.0	-24.2

¹ Excludes Yukon Territory and Northwest Territories.² Excludes mobile dwellings.³ Dwellings in which the number of persons exceeds the number of rooms.

14.5 Type of dwelling, by province and by census metropolitan area, 1971

Province and census metropolitan area	Total dwellings	Single detached	Multiple-unit types ¹	Single detached %	Multiple-unit types ¹ %
PROVINCE					
Newfoundland	110,440	85,970	23,760	77.8	21.6
Prince Edward Island	27,880	21,010	6,240	75.4	22.4
Nova Scotia	207,510	148,050	54,270	71.4	26.1
New Brunswick	157,635	110,630	43,535	70.2	27.6
Quebec	1,604,785	641,665	956,560	40.0	59.6
Ontario	2,225,490	1,365,585	851,200	61.4	38.2
Manitoba	288,375	208,450	76,170	72.3	26.4
Saskatchewan	267,565	218,050	45,410	81.5	17.0
Alberta	464,615	329,595	124,200	70.9	26.8
British Columbia	667,545	454,335	193,970	68.1	29.1
Yukon Territory and Northwest Territories	12,675	8,425	3,325	66.5	26.2
Canada	6,034,510	3,591,770	2,378,640	59.5	39.5
METROPOLITAN AREA					
Calgary, Alta.	121,155	73,055	47,130	60.3	38.9
Chicoutimi-Jonquière, Que.	29,655	13,625	15,830	45.9	53.3
Edmonton, Alta.	144,735	90,210	53,515	62.3	36.9
Halifax, NS	59,685	28,570	29,925	47.9	50.1
Hamilton, Ont.	146,280	92,920	53,275	63.5	36.4
Kitchener, Ont.	66,550	38,675	27,840	58.1	41.9
London, Ont.	87,135	53,030	33,770	60.9	38.7
Montreal, Que.	805,770	190,780	614,005	23.7	76.2
Ottawa-Hull, Ont./Que.	170,025	78,820	90,510	46.4	53.2
Quebec, Que.	127,375	45,080	81,925	35.4	64.3
Regina, Sask.	42,525	29,050	13,245	68.3	31.1
St. Catharines-Niagara, Ont.	88,940	65,355	23,410	73.5	26.3
St. John's, Nfld.	29,740	15,970	13,700	53.8	46.1
Saint John, NB	28,690	12,885	15,340	44.9	53.4
Saskatoon, Sask.	38,590	25,525	12,765	66.1	33.1
Sudbury, Ont.	39,390	23,725	15,365	60.2	39.0
Thunder Bay, Ont.	32,190	24,525	7,600	76.2	23.6
Toronto, Ont.	773,990	354,965	418,755	45.9	54.1
Vancouver, BC	345,875	216,455	127,200	62.6	36.7
Victoria, BC	66,360	42,875	22,860	64.6	34.5
Windsor, Ont.	74,175	52,905	21,130	71.3	28.5
Winnipeg, Man.	166,480	105,565	60,565	63.4	36.4

¹ Includes double and row houses, apartments, flats, duplexes, etc.**14.6 Owned and rented dwellings by province and type of locality, Censuses of 1961 and 1971**

Province or territory and type of locality	1961			1971		
	Owner-occupied	Tenant-occupied	Owner/tenant ratio	Owner-occupied	Tenant-occupied	Owner/tenant ratio
PROVINCE						
Newfoundland	76,691	11,249	87.2/12.8	88,335	22,110	80.0/20.0
Prince Edward Island	18,958	4,984	79.2/20.8	20,725	7,155	74.3/25.7
Nova Scotia	131,405	43,935	74.9/25.1	147,705	59,805	71.2/28.8
New Brunswick	94,022	38,692	70.8/29.1	109,450	48,190	69.4/30.6
Quebec	583,981	607,387	49.0/51.0	761,340	843,445	47.4/52.6
Ontario	1,157,229	483,521	70.5/29.5	1,400,340	825,150	62.9/37.1
Manitoba	176,156	63,598	73.5/26.5	190,585	97,785	66.1/33.9
Saskatchewan	188,226	57,198	76.7/23.3	194,530	73,035	72.7/27.3
Alberta	248,537	101,272	71.0/29.0	296,710	167,905	63.9/36.1
British Columbia	326,090	133,442	71.0/29.0	422,780	244,765	63.3/36.7
Yukon Territory and Northwest Territories	4,292	3,628	54.2/45.8	4,430	8,240	35.0/65.0
Canada	3,005,587	1,548,906	66.0/34.0	3,636,930	2,397,585	60.3/39.7
TYPE OF LOCALITY						
Urban	1,946,559	1,333,909	59.3/40.7	2,572,885	2,164,535	54.3/45.7
500,000 and over	1,178,136 ¹	910,934 ¹	56.4/43.6 ¹	956,765	1,118,545	46.1/53.9
100,000 - 499,999				556,375	428,770	56.5/43.5
30,000 - 99,999				304,450	230,375	56.9/43.1
5,000 - 29,999				449,685	248,740	64.4/35.6
Under 5,000	244,865	106,452	69.7/30.3	305,610	138,105	68.9/31.1
Rural	1,059,028	214,997	83.1/16.9	1,064,045	233,050	82.0/18.0
Non-farm	641,038	183,434	77.8/22.2	758,830	210,835	78.3/21.7
Farm	417,990	31,563	93.0/7.0	305,210	22,220	93.2/6.8

¹ 1961 figures available for urban group "100,000 and over", only.

14.7 Average number of rooms per dwelling, and percentage of crowded dwellings¹, by province, Censuses of 1961 and 1971

Province	Average number of rooms per dwelling		Percentage of crowded dwellings ¹	
	1961	1971	1961	1971
Newfoundland	5.9	5.8	29.9	23.6
Prince Edward Island	6.4	6.1	17.0	12.8
Nova Scotia	5.8	5.7	18.2	12.4
New Brunswick	5.9	5.7	21.0	15.2
Quebec	5.3	5.2	21.8	12.4
Ontario	5.5	5.6	11.8	6.8
Manitoba	4.9	5.2	16.8	9.2
Saskatchewan	4.9	5.3	18.7	9.8
Alberta	4.9	5.4	17.5	8.3
British Columbia	4.9	5.2	12.1	6.8
Yukon Territory and Northwest Territories	3.4	4.3	45.4	30.7
Canada	5.3	5.4	16.5	9.4

¹ Dwellings in which the number of persons exceeds the number of rooms.

14.8 Percentage of dwellings with specified facilities, by province and type of locality, Census 1971

Province or territory and type of locality	Total occupied dwellings	Percentage of dwellings with		
		Running water	Bath or shower (exclusive use)	Flush toilet (exclusive use)
Newfoundland				
Rural	45,610	70.0	45.6	55.2
Urban	64,830	93.0	81.4	87.9
Prince Edward Island				
Rural	16,800	77.8	63.8	66.0
Urban	11,075	98.5	92.3	96.2
Nova Scotia				
Rural	88,190	82.8	65.0	70.0
Urban	119,320	98.7	91.3	95.5
New Brunswick				
Rural	63,795	83.1	65.1	73.0
Urban	93,840	98.0	91.0	95.7
Quebec				
Rural	259,345	94.9	77.4	93.2
Urban	1,345,440	99.6	95.2	98.4
Ontario				
Rural	362,055	89.9	82.5	84.5
Urban	1,863,435	99.5	96.9	98.0
Manitoba				
Rural	78,920	66.2	60.1	55.0
Urban	209,450	98.9	95.1	96.3
Saskatchewan				
Rural	118,920	66.1	61.0	55.9
Urban	148,645	97.6	93.5	94.8
Alberta				
Rural	111,695	72.2	66.3	64.7
Urban	352,920	99.0	95.7	96.6
British Columbia				
Rural	146,540	92.4	88.3	88.8
Urban	521,010	99.6	96.9	97.7
Yukon Territory and Northwest Territories				
Rural	5,215	35.4	35.7	31.4
Urban	7,455	87.3	85.3	84.8
Canada				
Rural	1,297,090	84.1	73.6	77.6
Urban	4,737,415	99.3	95.6	97.6

14.9 Annual estimates of household facilities and equipment, May 1972

Item	Estimated households '000	Percentage of households	
		1972	1971
Total households	6,108	100.0	100.0
Principal heating facilities			
Furnaces	4,924	80.6	80.6
Oil	2,935	48.1	47.5
Gas	1,916	31.4	31.6
Wood or coal	69	1.1	1.5
Other equipment	1,183	19.4	19.4
Oil	537	8.8	9.7
Gas	138	2.3	2.5
Wood or coal	114	1.9	2.2
Electricity	390	6.4	4.9

14.9 Annual estimates of household facilities and equipment, May 1972 (concluded)

Item	Estimated households '000	Percentage of households	
		1972	1971
Cooking fuel			
Electricity	4,928	80.7	78.9
Piped gas	668	10.9	11.4
Bottled gas	142	2.3	2.7
Wood or coal	164	2.7	3.1
Kerosene, oil or other	200	3.3	3.6
Fuel used for piped hot water supply			
Electricity	2,961	48.5	48.7
Gas	1,924	31.5	31.6
Oil	783	12.8	12.1
Coal or wood	46	0.8	0.9
No hot water supply	392	6.4	6.5
Refrigerators and home freezers			
Electric refrigerators	6,026	98.7	98.2
Home freezers	2,172	35.6	34.1
Washing machines			
Automatic	2,609	42.7	39.5
Other electric	2,205	36.1	40.5
Clothes dryers	2,781	45.5	43.1
Telephones	5,778	94.6	94.2
Radios			
All types, except car	5,961	97.6	97.3
FM receivers	3,814	62.4	57.6
TV sets			
All types	5,850	95.8	96.1
Black and white	5,116	83.8	1
Colour	1,478	24.2	18.4
Record players	4,332	70.9	70.0
Automobiles	4,720	77.3	77.5
One automobile	3,590	58.8	59.5
Two or more automobiles	1,129	18.5	18.1
Miscellaneous			
Window-type air conditioners	353	5.8	5.3
Automatic dishwashers	564	9.2	8.6
Floor polishers	3,261	53.4	53.5 ²
Outboard motors	671	11.0	10.5 ²
Adult-size bicycles	1,704	27.9	1
Snowmobiles	504	8.3	7.3
Pianos	814	13.3	1
Portable humidifiers	817	13.4	1
Lawn mowers (power)	2,964	48.5	47.0 ²
Snow blowers	278	4.6	1
Wall-to-wall carpeting	2,846	46.6	1
One room	1,204	19.7	1
Two rooms	726	11.9	1
Three or more rooms	916	15.0	1

¹ Data not collected in 1971.² 1970 figures (data not collected in 1971).**14.10 Value of new and repair construction work performed, 1968-72¹**

Year	New \$'000,000	Repair \$'000,000	Total \$'000,000	Total construction as percentage of gross national expenditure
1968	9,909	2,305	12,214	17.1
1969	10,825	2,382	13,207	16.8
1970	11,320	2,461	13,781	16.3
1971	13,112	2,535	15,647	17.0
1972	13,686	2,655	16,341	..

¹ Actual expenditures 1968-70; preliminary actual 1971; intentions 1972.**14.11 Value of construction work performed, by contractors and others, 1968-72¹ (million dollars)**

Item	1968	1969	1970	1971	1972
Contract construction	9,935	10,521	10,827	12,129	12,571
New	8,675	9,134	9,356	10,650	11,022
Repair	1,260	1,387	1,471	1,479	1,549
Other construction ²	2,279	2,686	2,954	3,518	3,770
New	1,234	1,691	1,964	2,462	2,664
Repair	1,045	995	990	1,056	1,106
Total, construction	12,214	13,207	13,781	15,647	16,341
New	9,909	10,825	11,320	13,112	13,686
Repair	2,305	2,382	2,461	2,535	2,655

¹ Actual expenditures 1968-70; preliminary actual 1971; intentions 1972.² Work done by the labour forces of utilities, government departments and other employers not primarily engaged in the construction industry.

14.12 Value of construction work performed, by type of structure, 1970-72¹ (thousand dollars)

Type of structure	1970			1971			1972		
	New	Repair	Total	New	Repair	Total	New	Repair	Total
BUILDING CONSTRUCTION									
Residential	3,137,800	870,700	4,008,500	3,928,600	899,400	4,828,000	4,254,000	929,700	5,183,700
Industrial	804,196	196,014	1,000,210	836,861	190,761	1,027,622	709,911	198,366	908,277
Factories, plants, workshops, food canneries	696,871	150,838	847,709	596,766	148,092	744,858	487,374	154,065	641,439
Mine and mill buildings	86,016	25,162	111,178	222,969	24,088	246,736	206,756	24,612	231,368
Railway stations, offices, roadway buildings	14,134	11,626	25,760	11,063	11,038	22,101	10,093	11,772	21,865
Railway shops, engine houses, water and fuel stations	7,175	8,368	15,563	7,542	13,603	21,145	13,605	7,917	21,522
Commercial	1,065,929	220,634	1,286,563	1,140,813	204,087	1,344,900	1,264,697	210,691	1,475,388
Warehouses, storerooms, refrigerated storage, etc.	69,319	18,778	88,097	69,006	19,417	88,423	76,634	20,286	96,920
Grain elevators	4,075	3,871	7,946	3,483	8,141	11,624	7,409	12,852	20,261
Hotels, clubs, restaurants, cafeterias, tourist cabins	75,916	16,926	92,842	125,472	17,496	142,968	167,259	19,019	186,278
Office buildings	536,442	81,381	617,823	540,893	77,180	618,073	531,842	77,332	609,174
Stores, retail and wholesale	220,678	52,520	273,198	237,629	43,270	280,899	275,325	46,515	321,840
Garages and service stations	85,567	31,877	117,444	74,999	26,026	101,025	100,546	26,782	127,328
Theatres, arenas, amusement and recreational buildings	72,119	14,071	86,190	87,829	14,748	102,577	104,464	14,404	118,868
Laundries and dry-cleaning establishments	1,813	1,210	3,023	1,502	1,292	2,794	1,270	1,270	2,540
Institutional	1,205,234	124,961	1,330,195	1,320,668	153,332	1,474,000	1,283,190	163,381	1,446,571
Schools and other educational buildings	822,797	67,118	889,915	872,512	74,744	947,256	811,306	79,544	890,850
Churches and other religious buildings	22,189	6,738	28,927	12,184	18,983	31,167	17,537	6,568	24,105
Hospitals, sanatoria, clinics, first-aid stations, etc.	230,739	32,588	263,327	263,168	36,453	299,621	287,853	46,606	334,459
Other	129,509	18,517	148,026	172,804	35,336	208,140	166,494	30,663	197,157
Other building	361,828	110,991	472,819	366,381	102,599	468,980	354,394	103,101	457,495
Farm buildings (excludes dwellings)	150,094	58,326	208,420	150,514	58,485	208,999	149,971	57,746	207,717
Broadcasting, radio and television, relay and booster stations, telephone exchanges	57,798	8,607	66,405	55,205	9,907	65,112	58,212	10,616	68,828
Aeroplane hangars	24,495	3,173	27,668	15,720	1,236	16,956	4,561	1,373	5,934
Passenger terminals, bus, boat or air	26,655	5,099	31,754	28,009	5,301	33,310	22,847	5,725	28,572
Armouries, barracks, drill halls, etc.	6,705	6,548	13,253	9,864	6,079	15,943	9,725	6,423	16,148
Bunkhouses, dormitories, camp cookeries, bush depots and camps	16,814	10,923	27,737	12,132	3,232	15,364	7,148	3,443	10,591
Laboratories	15,492	3,336	18,828	20,196	2,590	22,786	30,583	2,712	33,295
Other	63,775	19,569	83,344	74,741	15,769	90,510	71,347	15,063	86,410
Total, building construction	6,574,987	1,523,300	8,098,287	7,593,323	1,550,179	9,143,502	7,866,192	1,605,239	9,471,431
ENGINEERING CONSTRUCTION									
Marine	113,501	31,158	144,659	113,815	31,706	145,521	166,635	33,891	200,526
Docks, wharves, piers, breakwaters	53,546	10,268	63,814	51,781	10,265	62,046	87,617	10,437	98,054
Retaining walls, embankments, riprapping	18,386	14,423	32,809	18,759	13,450	32,209	22,444	13,654	36,098
Canals and waterways	27,447	2,381	29,828	29,716	2,918	32,634	31,425	3,565	34,990
Dredging and pile driving	4,973	2,004	6,977	4,604	1,676	6,280	4,701	2,096	6,797
Dyke construction	2,143	2,881	5,024	4,378	4,383	8,761	9,668	272	9,940
Logging booms	320	561	881	621	567	1,188	461	557	1,018
Other	6,686	977	7,663	3,956	2,447	6,403	10,319	3,310	13,629
Road, highway and aerodrome	1,011,909	268,355	1,280,264	1,136,920	285,486	1,422,406	1,207,667	302,786	1,510,453
Highway, road and street construction, (includes grading, scraping, oiling, filling)	975,865	256,110	1,231,975	1,092,372	272,771	1,365,143	1,156,494	289,485	1,445,979
Parkways, paths	9,562	3,108	12,670	9,817	13,017	22,834	15,377	3,432	18,809
Sidewalks, paths	14,006	6,405	20,411	17,509	7,008	24,517	19,309	6,617	25,926
Aerodromes, landing fields, runways, tarmac	12,476	2,732	15,208	17,222	2,507	19,729	16,487	3,252	19,739

14.12 Value of construction work performed, by type of structure, 1970-72¹ (thousand dollars) (concluded)

Type of structure	1970			1971			1972		
	New	Repair	Total	New	Repair	Total	New	Repair	Total
ENGINEERING CONSTRUCTION (concluded)									
Waterworks and sewerage systems	412, 134	75, 575	487, 709	546, 136	83, 179	629, 315	578, 646	85, 864	664, 510
Tile drains, drainage ditches, storm sewers	69, 697	12, 981	82, 678	91, 018	15, 883	106, 901	87, 934	15, 443	103, 377
Water mains, hydrants and services	94, 353	37, 567	131, 920	127, 720	40, 765	168, 485	135, 000	41, 634	176, 634
Sewerage systems and connections	219, 543	19, 354	238, 897	281, 606	20, 164	302, 770	317, 904	22, 643	340, 547
Pumping stations, water	23, 102	4, 370	27, 472	39, 306	4, 400	43, 706	32, 637	4, 833	37, 470
Water storage tanks	5, 439	1, 303	6, 742	6, 486	1, 397	7, 883	5, 171	1, 311	6, 482
Dams and irrigation	46, 805	11, 412	58, 217	66, 856	11, 376	78, 232	56, 871	12, 123	68, 994
Dams and reservoirs	16, 658	3, 091	19, 749	43, 561	2, 527	46, 088	36, 134	3, 328	39, 462
Irrigation and land reclamation projects	30, 147	8, 321	38, 468	23, 295	8, 849	32, 144	20, 737	8, 795	29, 532
Electric power	1, 123, 378	98, 203	1, 223, 581	1, 179, 138	128, 420	1, 307, 558	1, 142, 005	139, 551	1, 281, 556
Electric power generating plants, including water conveying and controlling structures	602, 914	26, 856	629, 770	648, 284	48, 582	696, 866	568, 618	52, 160	620, 778
Electric transformer stations	10, 495	665	11, 160	11, 503	559	12, 062	17, 183	664	17, 847
Power transmission and distribution lines, trolley wires	503, 040	65, 979	569, 019	508, 659	74, 016	582, 675	546, 690	81, 351	628, 041
Street lighting	8, 929	4, 703	13, 632	10, 692	5, 263	15, 955	9, 514	5, 376	14, 890
Railway, telephone and telegraph	375, 616	192, 728	568, 344	416, 988	190, 983	607, 971	435, 452	203, 151	638, 603
Railway tracks and roadbed	138, 200	118, 226	256, 426	152, 728	115, 851	268, 579	134, 571	118, 884	253, 455
Signals and interlockers	13, 618	15, 463	29, 081	10, 927	15, 580	26, 507	9, 750	16, 358	26, 108
Telegraph and telephone lines, underground and marine cables	223, 798	59, 039	282, 837	253, 333	59, 552	312, 885	291, 131	67, 909	359, 040
Gas and oil facilities	938, 936	154, 695	1, 093, 631	1, 148, 055	154, 057	1, 302, 112	1, 211, 432	173, 303	1, 384, 735
Gas mains and services	120, 986	9, 414	130, 400	114, 140	10, 527	124, 667	127, 341	10, 671	138, 012
Pumping stations, oil	9, 373	3, 042	12, 415	32, 634	3, 140	35, 774	23, 699	3, 503	27, 202
Pumping stations, gas	44, 032	3, 371	47, 403	27, 895	3, 593	29, 488	15, 171	3, 574	16, 745
Oil storage tanks	31, 108	3, 393	34, 501	24, 064	3, 323	27, 387	22, 655	3, 660	26, 315
Gas storage tanks	4, 478	363	4, 841	1, 697	1, 155	2, 852	3, 924	3, 200	7, 124
Oil pipelines	17, 264	5, 286	22, 550	16, 323	4, 230	20, 553	42, 834	4, 797	47, 631
Gas pipelines	76, 355	1, 498	77, 853	161, 728	950	162, 678	124, 040	47, 631	210, 671
Oil and gas wells	372, 764	58, 603	431, 367	420, 199	55, 741	475, 940	529, 601	61, 973	590, 574
Oil refinery — processing units	105, 947	151, 818	257, 765	143, 201	48, 095	191, 296	205, 432	57, 556	262, 788
Natural gas processing plants	156, 629	23, 854	180, 483	206, 174	26, 303	232, 477	117, 230	29, 657	146, 887
Other engineering	720, 763	103, 763	824, 526	910, 967	99, 782	1, 010, 749	1, 020, 671	99, 435	1, 120, 106
Bridges, trestles, culverts, overpasses, viaducts	151, 193	29, 816	181, 009	153, 404	29, 461	182, 865	156, 780	28, 039	184, 819
Tunnels and subways	46, 178	1, 282	47, 460	44, 510	813	45, 323	46, 651	800	47, 451
Incinerators	4, 116	1, 444	5, 560	4, 272	937	5, 209	8, 412	1, 058	9, 470
Park systems, landscaping, sodding, etc.	13, 282	5, 733	19, 015	35, 488	7, 760	43, 248	35, 042	10, 676	45, 718
Swimming pools, tennis courts, outdoor recreation facilities	17, 614	2, 970	20, 584	11, 122	3, 909	15, 031	16, 245	1, 466	17, 711
Mine shafts and other below surface workings	274, 569	3, 897	278, 466	230, 577	3, 909	234, 486	236, 473	3, 380	239, 853
Fences, snowsheds, signs, guard rails	28, 264	15, 141	43, 405	27, 949	14, 766	42, 715	28, 543	14, 891	43, 434
Other engineering	185, 547	45, 480	231, 027	403, 645	41, 232	444, 877	492, 519	39, 694	532, 213
Total, engineering construction	4, 745, 042	937, 889	5, 682, 931	5, 518, 875	984, 989	6, 503, 864	5, 819, 379	1, 050, 104	6, 869, 483
Total, all construction	11, 320, 029	2, 461, 189	13, 781, 218	13, 112, 198	2, 535, 168	15, 647, 366	13, 685, 571	2, 655, 343	16, 340, 914

¹ Actual expenditures 1970; preliminary actual 1971; intentions 1972.

14.13 Labour content, cost of materials and value of work performed in construction, by province and by employer, 1970-72¹

Province and employer	Year	Labour content		Cost of materials used \$'000	Value of work performed \$'000
		No.	Value \$'000		
PROVINCE					
Newfoundland	1970	18,095	147,752	153,188	415,099
	1971	23,712	194,539	213,434	539,215
	1972	23,666	215,242	240,771	594,676
Prince Edward Island	1970	2,542	15,624	19,961	45,661
	1971	2,577	19,138	26,433	57,388
	1972	2,779	22,500	30,409	67,116
Nova Scotia	1970	21,748	163,581	224,048	484,709
	1971	18,433	157,503	215,441	466,011
	1972	18,443	175,203	242,720	526,464
New Brunswick	1970	19,018	121,614	151,236	339,898
	1971	16,239	123,080	156,328	349,848
	1972	16,389	138,170	173,448	390,859
Quebec	1970	122,457	971,617	1,193,485	2,788,533
	1971	126,157	1,132,944	1,391,622	3,252,589
	1972	123,873	1,224,106	1,505,768	3,517,388
Ontario	1970	206,616	1,857,513	2,132,373	4,984,865
	1971	206,587	2,088,223	2,388,862	5,623,599
	1972	193,285	2,143,965	2,433,430	5,758,832
Manitoba	1970	30,590	249,055	284,983	695,110
	1971	28,929	250,553	285,753	697,462
	1972	28,748	275,100	310,948	763,895
Saskatchewan	1970	21,778	171,499	197,086	475,663
	1971	21,782	188,987	217,904	523,886
	1972	20,582	195,918	226,091	543,370
Alberta	1970	63,696	581,882	717,722	1,709,950
	1971	58,582	596,137	747,599	1,764,195
	1972	55,134	616,517	780,171	1,828,019
British Columbia, Yukon Territory and Northwest Territories	1970	64,092	630,548	792,977	1,841,730
	1971	72,380	814,222	1,015,131	2,373,173
	1972	65,147	802,951	1,007,215	2,350,295
Canada	1970	570,632	4,910,685	5,867,059	13,781,218
	1971	575,378	5,565,326	6,658,507	15,647,366
	1972	548,046	5,809,672	6,950,971	16,340,914
EMPLOYER					
Contractors	1970	437,159	3,814,469	4,684,519	10,827,255
	1971	433,404	4,248,731	5,262,151	12,129,602
	1972	408,176	4,383,537	5,467,428	12,571,260
Utilities	1970	58,184	520,057	557,007	1,418,225
	1971	63,200	636,033	661,675	1,712,993
	1972	64,414	710,971	720,073	1,885,074
Governments	1970	46,218	339,353	297,132	831,803
	1971	48,129	397,835	343,168	967,215
	1972	46,764	425,590	366,160	1,031,427
Miscellaneous	1970	29,071	236,806	328,401	703,935
	1971	30,645	282,727	391,513	837,556
	1972	28,692	289,574	397,310	853,153
Total	1970	570,632	4,910,685	5,867,059	13,781,218
	1971	575,378	5,565,326	6,658,507	15,647,366
	1972	548,046	5,809,672	6,950,971	16,340,914

¹ Actual expenditures 1970; preliminary actual 1971; intentions 1972.

14.14 Value of building permits issued, by province, 1971 and 1972 with totals for 1968-72 (thousand dollars)

Province or territory and year		Residential construction			Non-residential construction			Total
		New	Repair	Total	Industrial	Commercial	Institutional and government	
Newfoundland	1971	20,709	1,447	22,156	1,411	5,202	7,132	35,901
	1972 ^P	15,652	1,850	17,502	1,679	4,858	17,207	41,246
Prince Edward Island	1971	2,328	242	2,570	408	991	3,875	7,844
	1972 ^P	3,209	239	3,448	21	1,731	1,250	6,450
Nova Scotia	1971	62,663	2,968	65,631	9,653	18,345	10,082	103,711
	1972 ^P	80,090	4,869	84,959	7,756	54,709	14,122	161,546
New Brunswick	1971	33,908	1,922	35,830	36,739	19,143	9,066	100,778
	1972 ^P	50,516	4,122	54,638	3,581	39,286	20,633	118,138
Quebec	1971	667,344	19,105	686,449	132,707	184,409	220,281	1,223,846
	1972 ^P	644,977	29,865	674,842	116,387	304,178	188,237	1,283,644
Ontario	1971	1,418,811	36,701	1,455,512	196,882	488,607	459,263	2,600,264
	1972 ^P	1,633,343	72,724	1,706,067	277,147	555,528	429,231	2,967,973
Manitoba	1971	106,031	2,611	108,642	10,596	34,311	40,526	194,075
	1972 ^P	119,006	3,769	122,775	14,306	39,773	47,106	223,960

14.14 Value of building permits issued, by province, 1971 and 1972 with totals for 1968-72 (thousand dollars) (concluded)

Province or territory and year	Residential construction			Non-residential construction			Total
	New	Repair	Total	Industrial	Commercial	Institutional and government	
Saskatchewan	1971	47,496	1,612	49,108	4,880	15,978	114,577
	1972 ^D	62,077	2,839	64,916	6,089	19,278	107,842
Alberta	1971	318,031	4,255	322,286	32,852	111,433	545,084
	1972 ^D	349,591	8,413	358,004	33,809	176,042	634,981
British Columbia	1971	444,026	10,853	454,879	44,796	191,366	785,501
	1972 ^D	490,224	27,900	518,124	55,925	195,506	854,563
Northwest Territories	1971	3,924	169	4,093	440	3,655	8,921
	1972 ^D	3,924	169	4,093	440	3,655	8,921
Total	1968	2,317,587	88,045	2,405,632	530,670	696,203	4,775,715
	1969	2,350,232	78,958	2,429,190	567,048	839,155	4,895,551
	1970	2,235,938	75,625	2,311,563	497,682	807,374	4,700,159
	1971	3,121,347	81,716	3,203,063	470,924	1,069,785	5,711,581
	1972 ^D	3,452,609	156,759	3,609,368	517,140	1,394,544	6,409,264

14.15 Estimated value of proposed construction as indicated by building permits issued in 50 municipalities, 1971 and 1972 (thousand dollars)

Province and municipality	1971	1972 ^D	Province and municipality	1971	1972 ^D
NEWFOUNDLAND			Oshawa	25,257	32,236
St. John's	21,903	17,714	Ottawa	173,508	195,836
PRINCE EDWARD ISLAND			Scarborough (borough)	160,829	200,045
Charlottetown	5,918	4,445	Thunder Bay	32,438	28,314
NOVA SCOTIA			Toronto	318,759	250,303
Halifax	28,963	48,240	Windsor	71,057	65,361
NEW BRUNSWICK			York (borough)	15,269	24,153
Fredericton	7,093	11,981	York North (borough)	221,736	238,481
Moncton	20,131	42,201	MANITOBA		
Saint John	47,567	28,750	Fort Garry	139,387	178,271
QUEBEC			St. Boniface		
LaSalle	15,401	16,635	St. James		
Montreal	164,337	164,491	Winnipeg		
Quebec	131,841	70,452	SASKATCHEWAN		
St. Laurent	20,350	32,533	Moose Jaw	7,006	7,304
Ste. Foy	27,495	33,346	Prince Albert	8,158	8,674
Sept-Îles	37,033	19,475	Regina	52,511	37,567
Sherbrooke	20,857	28,735	Saskatoon	22,539	24,010
Trois-Rivières	15,170	16,021	ALBERTA		
ONTARIO			Calgary	193,315	219,844
Brampton	29,702	18,656	Edmonton	166,030	179,955
Burlington	33,493	53,425	Jasper Place		
Etobicoke (borough)	155,824	150,320	Lethbridge	18,016	15,908
Hamilton	69,103	84,453	Medicine Hat	3,916	15,527
Kitchener	36,131	52,139	Red Deer	9,264	7,990
London	80,936	92,797	BRITISH COLUMBIA		
London Township	2,008	2,388	Burnaby District	52,420	52,640
Mississauga	143,526	179,515	Richmond Township	39,598	51,711
Nepean Township	37,867	39,323	Surrey District	51,273	47,260
			Vancouver	136,095	125,038
			Victoria	34,703	30,340

¹ Metropolitan Corporation of Greater Winnipeg.

² Jasper Place included with Edmonton following annexation.

14.16 Estimated value of building permits issued in metropolitan areas, 1971 and 1972 (thousand dollars)

Metropolitan area	1971	1972 ^D	Metropolitan area	1971	1972 ^D
St. John's ¹	21,903	17,714	London	84,641	97,229
Halifax	48,078	82,377	Windsor	81,662	73,199
Saint John	48,603	30,136	Winnipeg	151,659	178,271
Quebec	233,028	190,330	Regina	51,512	37,567
Montreal	516,808	591,663	Saskatoon	22,539	24,010
Ottawa-Hull	296,004	352,682	Calgary	193,335	219,844
Toronto	1,141,412	1,215,543	Edmonton	223,997	236,349
Hamilton	122,478	165,772	Vancouver	404,384	392,523
Kitchener	79,471	111,803	Victoria	84,537	95,799
Sudbury	72,869	64,214			

¹ Although this is a metropolitan area, only St. John's proper is included in the building permits survey.

14.17 Capital expenditures¹ on construction and on machinery and equipment, in current and constant (1961) dollars, 1961-72

Year	Capital expenditures (\$'000,000)				Total		Capital expenditures as percentage of gross national expenditure	
	Construction		Machinery and equipment		Current dollars	Constant 1961 dollars	Current dollars	Constant 1961 dollars
	Current dollars	Constant 1961 dollars	Current dollars	Constant 1961 dollars				
1961	5,630	5,630	2,662	2,662	8,292	8,292	21.2	21.2
1962	5,834	5,777	2,935	2,855	8,769	8,632	20.7	20.7
1963	6,156	5,936	3,242	3,084	9,398	9,020	20.7	20.5
1964	7,032	6,617	3,948	3,636	10,980	10,253	22.1	21.8
1965	8,175	7,254	4,760	4,261	12,935	11,515	23.6	23.0
1966	9,281	7,744	5,807	5,076	15,088	12,820	24.6	23.9
1967	9,474	7,823	5,874	5,170	15,348	12,993	23.4	23.4
1968	9,909	7,982	5,546	4,898	15,455	12,880	21.6	22.1
1969	10,824	8,305	6,103	5,255	16,927	13,560	21.5	22.2
1970	11,319	8,400	6,479	5,440	17,798	13,840	21.1	21.9
1971	13,114	9,222	6,674	5,470	19,788	14,692	21.5	22.0
1972	13,685	...	7,075	...	20,760	...	...	...

¹ Actual expenditures 1961-70; preliminary actual 1971; intentions 1972.

14.18 Summary of capital and repair expenditures, by economic sector, 1970-72¹ (million dollars)

Type of enterprise and year	Capital			Repair			Capital and repair		
	Con-struction	Ma-chinery and equip-ment	Total	Con-struction	Ma-chinery and equip-ment	Total	Con-struction	Ma-chinery and equip-ment	Total
Agriculture and fishing	1970	225	615	89	232	321	314	847	1,161
	1971	225	748	89	259	348	314	1,007	1,321
	1972	224	793	88	262	350	312	1,055	1,367
Forestry	1970	48	42	15	68	83	63	110	173
	1971	44	41	16	68	84	60	109	169
	1972	52	51	17	70	87	69	121	190
Mining, quarrying and oil wells	1970	996	352	1,348	137	343	1,133	695	1,828
	1971	1,291	414	1,705	132	358	1,423	772	2,195
	1972	1,225	433	1,658	137	368	1,362	801	2,163
Manufacturing	1970	997	2,226	3,223	213	1,204	1,417	3,430	4,640
	1971	877	2,072	2,949	207	1,222	1,429	3,294	4,378
	1972	809	2,068	2,877	225	1,271	1,496	3,339	4,373
Utilities	1970	2,044	1,584	3,628	375	843	2,419	2,427	4,846
	1971	2,321	1,654	3,975	398	864	2,719	2,518	5,237
	1972	2,453	1,766	4,219	430	917	2,883	2,683	5,566
Construction industry	1970	15	259	274	6	222	228	21	502
	1971	16	275	291	6	236	242	22	533
	1972	17	283	300	7	243	250	24	550
Housing	1970	3,138	—	3,138	871	—	871	4,009	—
	1971	3,929	—	3,929	899	—	899	4,828	—
	1972	4,254	—	4,254	930	—	930	5,184	—
Trade (wholesale and retail)	1970	210	335	545	78	69	147	288	404
	1971	172	315	487	60	66	126	232	381
	1972	197	352	549	61	66	127	258	418
Finance, insurance and real estate	1970	419	138	557	43	14	57	462	152
	1971	469	141	610	43	14	57	512	155
	1972	508	144	652	45	15	60	553	159
Commercial services	1970	131	512	643	23	96	119	154	608
	1971	173	534	707	24	92	116	197	626
	1972	210	638	848	25	97	122	235	735
Institutional services	1970	1,095	216	1,311	105	29	134	1,200	245
	1971	1,180	230	1,410	117	32	149	1,297	262
	1972	1,129	233	1,362	131	34	165	1,260	267
Government departments	1970	2,001	200	2,201	506	86	592	2,507	286
	1971	2,417	250	2,667	542	89	631	2,959	339
	1972	2,607	314	2,921	559	99	658	3,166	413
Total	1970	11,319	6,479	17,798	2,461	3,206	5,667	13,780	9,685
	1971	13,114	6,674	19,788	2,533	3,300	5,833	15,647	9,974
	1972	13,685	7,075	20,760	2,655	3,442	6,097	16,340	10,517

¹ Actual expenditures 1970; preliminary actual 1971; intentions 1972.

14.19 Capital and repair expenditures for certain economic sectors, 1970-72¹ (million dollars)

Type of enterprise and year	Capital			Repair			Capital and repair		
	Con- struc- tion	Ma- chinery and equip- ment	Total	Con- struc- tion	Ma- chinery and equip- ment	Total	Con- struc- tion	Ma- chinery and equip- ment	Total
MANUFACTURING									
Food and beverages	1970 96.8	207.7	304.5	23.0	112.3	135.3	119.8	320.0	439.8
	1971 92.3	187.4	279.7	22.3	109.8	132.1	114.6	297.2	411.8
	1972 74.4	186.5	260.9	23.3	110.2	133.5	97.7	296.7	394.4
Tobacco products	1970 2.9	8.4	11.3	2.6	7.4	10.0	5.5	15.8	21.3
	1971 2.5	9.1	11.6	3.1	7.1	10.2	5.6	16.2	21.8
	1972 2.1	10.2	12.3	3.0	7.0	10.0	5.1	17.2	22.3
Rubber	1970 22.3	33.8	56.1	2.2	23.0	25.2	24.5	56.8	81.3
	1971 20.1	71.7	91.8	2.2	22.0	24.2	22.3	93.7	116.0
	1972 11.1	31.5	42.6	2.0	22.7	24.7	13.1	54.2	67.3
Leather	1970 1.3	4.5	5.8	0.8	4.9	5.7	2.1	9.4	11.5
	1971 2.6	5.0	7.6	0.9	5.3	6.2	3.5	10.3	13.8
	1972 3.6	4.7	8.3	0.9	5.2	6.1	4.5	9.9	14.4
Textile	1970 20.3	60.8	81.1	4.8	31.4	36.2	25.1	92.2	117.3
	1971 14.7	56.4	71.1	4.8	30.8	35.6	19.5	87.2	106.7
	1972 14.2	72.6	86.8	5.0	33.2	38.2	19.2	105.8	125.0
Knitting mills	1970 2.1	13.6	15.7	0.7	3.6	4.3	2.8	17.2	20.0
	1971 2.2	12.5	14.7	0.7	3.2	3.9	2.9	15.7	18.6
	1972 1.9	15.3	17.2	0.7	3.3	4.0	2.6	18.6	21.2
Clothing	1970 1.1	7.7	8.8	1.5	4.1	5.6	2.6	11.8	14.4
	1971 2.4	8.4	10.8	1.1	3.4	4.5	3.5	11.8	15.3
	1972 2.0	8.4	10.4	1.1	3.6	4.7	3.1	12.0	15.1
Wood	1970 42.4	101.5	143.9	8.4	72.0	80.4	50.8	173.5	224.3
	1971 39.0	112.9	151.9	8.6	71.4	80.0	47.6	184.3	231.9
	1972 33.3	112.4	145.7	9.7	74.8	84.5	43.0	187.2	230.2
Furniture and fixtures	1970 7.1	8.6	15.7	1.9	5.5	7.4	9.0	14.1	23.1
	1971 4.3	9.4	13.7	1.9	5.2	7.1	6.2	14.6	20.8
	1972 4.1	10.5	14.6	1.8	5.5	7.3	5.9	16.0	21.9
Paper and allied industries	1970 132.6	399.4	532.0	15.5	210.9	226.4	148.1	610.3	758.4
	1971 159.3	361.1	520.4	14.6	209.1	223.7	173.9	570.2	744.1
	1972 112.0	313.0	425.0	14.7	223.0	237.7	126.7	536.0	662.7
Printing, publishing and allied industries	1970 13.8	51.2	65.0	3.8	12.8	16.6	17.6	64.0	81.6
	1971 15.2	54.5	69.7	4.2	13.3	17.5	19.4	67.8	87.2
	1972 14.5	43.3	57.8	3.7	12.4	16.1	18.2	55.7	73.9
Primary metals	1970 118.2	307.0	425.2	28.6	324.6	353.2	146.8	631.6	778.4
	1971 87.9	304.9	392.8	26.9	338.8	365.7	114.8	643.7	758.5
	1972 74.1	309.5	383.6	29.2	357.8	387.0	103.3	667.3	770.6
Metal fabricating	1970 32.5	104.4	136.9	10.7	59.0	69.7	43.2	163.4	206.6
	1971 19.4	90.3	109.7	8.5	53.4	61.9	27.9	143.7	171.6
	1972 15.3	93.7	109.0	8.7	55.3	64.0	24.0	149.0	173.0
Machinery	1970 26.1	46.8	72.9	5.5	19.4	24.9	31.6	66.2	97.8
	1971 12.4	40.4	52.8	5.3	14.3	19.6	17.7	54.7	72.4
	1972 16.5	41.1	57.6	4.8	17.2	22.0	21.3	58.3	79.6
Transportation equipment	1970 49.6	203.9	253.5	11.3	75.6	86.9	60.9	279.5	340.4
	1971 29.4	104.7	134.1	11.2	76.8	88.0	40.6	181.5	222.1
	1972 28.5	108.9	137.4	12.5	80.0	92.5	41.0	188.9	229.9
Electrical products	1970 26.7	70.0	96.7	6.3	31.7	38.0	33.0	101.7	134.7
	1971 29.9	81.0	110.9	7.6	35.2	42.8	37.5	116.2	153.7
	1972 20.7	83.5	104.2	8.7	36.1	44.8	29.4	119.6	149.0
Non-metallic mineral products	1970 32.7	102.3	135.0	6.0	76.5	82.5	38.7	178.8	217.5
	1971 22.6	69.0	91.6	6.8	69.7	76.5	35.4	138.7	168.1
	1972 28.7	109.4	138.1	6.7	71.3	78.0	35.4	180.7	216.1
Petroleum and coal products	1970 213.7	17.4	231.1	51.0	9.2	60.2	264.7	26.6	291.3
	1971 195.2	29.6	224.8	55.6	9.7	64.3	250.8	38.3	289.1
	1972 262.6	19.2	281.8	66.0	10.1	76.1	328.6	29.3	357.9
Chemical and chemical products ²	1970 132.2	129.3	261.5	23.8	97.2	121.0	156.0	226.5	382.5
	1971 111.4	126.2	237.6	16.9	122.1	139.0	128.3	248.3	376.6
	1972 77.5	146.3	223.8	18.0	118.8	136.8	95.4	265.1	360.6
Miscellaneous	1970 22.7	36.2	58.9	5.0	22.4	27.4	27.7	58.6	86.3
	1971 14.1	37.9	52.0	4.3	22.3	26.6	18.4	60.2	78.6
	1972 12.3	44.6	56.9	4.4	23.3	27.7	16.7	67.9	84.6
Capital items charged to operating expenses	1970 —	311.8	311.8	—	—	—	—	311.8	311.8
	1971 —	299.4	299.4	—	—	—	—	299.4	299.4
	1972 —	303.5	303.5	—	—	—	—	303.5	303.5
Total, manufacturing	1970 997.1	2,226.3	3,223.4	213.4	1,203.5	1,416.9	1,210.5	3,429.8	4,640.3
	1971 876.9	2,071.8	2,948.7	207.5	1,221.9	1,429.4	1,084.4	3,293.7	4,378.1
	1972 809.4	2,068.1	2,877.5	224.9	1,270.8	1,495.7	1,034.3	3,338.9	4,373.2
MINING									
Metal mines ³	1970 335.6	150.3	485.9	36.6	220.2	256.8	372.2	370.5	742.7
	1971 579.6	232.7	812.3	34.3	234.0	268.3	613.9	466.7	1,080.6
	1972 502.2	313.0	815.2	33.6	237.3	270.9	535.8	550.3	1,086.1
Iron mines	1970 29.9	20.7	50.6	11.2	81.6	92.8	41.1	102.3	143.4
	1971 169.7	55.3	225.0	7.7	83.0	90.7	177.4	138.3	315.7
	1972 232.8	98.4	331.2	8.1	87.8	95.9	240.9	186.2	427.1
Other metal mines	1970 305.7	129.6	435.3	25.4	138.6	164.0	331.1	268.2	599.3
	1971 409.9	177.4	587.3	26.6	151.0	177.6	436.5	328.4	764.9
	1972 269.4	214.6	484.0	25.5	149.5	175.0	294.9	364.1	659.0
Petroleum and gas ⁴	1970 552.6	86.2	638.8	93.5	22.5	116.0	646.1	108.7	754.8
	1971 646.1	87.1	733.2	92.3	28.8	121.1	738.4	115.9	854.3
	1972 677.0	57.6	734.6	97.4	28.4	125.8	774.4	86.0	860.4
Other mining ⁵	1970 107.9	115.9	223.8	7.1	99.9	107.0	115.0	215.8	330.8
	1971 65.4	94.4	159.8	5.8	95.1	100.9	71.2	189.5	260.7
	1972 45.6	63.0	108.6	5.8	102.4	108.2	51.4	165.4	216.8
Total, mining	1970 996.1	352.4	1,348.5	137.2	342.6	479.8	1,133.3	695.0	1,828.3
	1971 1,291.1	414.2	1,705.3	132.4	357.9	490.3	1,423.5	772.1	2,195.6
	1972 1,224.8	433.6	1,658.4	136.8	368.1	504.9	1,361.6	801.7	2,163.3

14.19 Capital and repair expenditures for certain economic sectors, 1970-72¹ (million dollars) (concluded)

Type of enterprise and year		Capital			Repair			Capital and repair		
		Con- struc- tion	Ma- chinery and equip- ment	Total	Con- struc- tion	Ma- chinery and equip- ment	Total	Con- struc- tion	Ma- chinery and equip- ment	Total
UTILITIES										
Electric power	1970	1,057.4	552.7	1,610.1	93.7	78.9	172.6	1,151.1	631.6	1,782.7
	1971	1,156.8	595.0	1,751.8	119.1	51.0	170.1	1,275.9	646.0	1,921.9
	1972	1,191.9	633.5	1,825.4	129.8	55.5	185.3	1,321.7	689.0	2,010.7
Gas distribution	1970	70.9	29.5	100.4	10.7	5.5	16.2	81.6	35.0	116.6
	1971	87.2	26.1	113.3	11.5	4.5	16.0	98.7	30.6	129.3
	1972	90.0	28.7	118.7	11.5	4.8	16.3	101.5	33.5	135.0
Railway transport	1970	185.5	121.4	306.9	166.1	254.0	420.1	351.6	375.4	727.0
	1971	192.6	129.7	322.3	164.7	277.0	441.7	357.3	406.7	764.0
	1972	172.4	144.5	316.9	170.2	294.4	464.6	342.6	438.9	781.5
Urban transit	1970	23.3	17.4	40.7	9.1	31.5	40.6	32.4	48.9	81.3
	1971	24.8	25.4	50.2	9.6	31.4	41.0	34.4	56.8	91.2
	1972	34.5	21.0	55.5	10.6	33.9	44.5	45.1	54.9	100.0
Water transport and services	1970	73.2	38.1	111.3	9.0	21.6	30.6	82.2	59.7	141.9
	1971	64.6	32.4	97.0	8.5	23.3	31.8	73.1	55.7	128.8
	1972	89.5	33.3	122.8	10.5	20.3	30.8	100.0	53.6	153.6
Motor transport	1970	13.5	83.2	96.7	4.0	101.3	105.3	17.5	184.5	202.0
	1971	9.5	84.5	94.0	4.2	112.2	116.4	13.7	196.7	210.4
	1972	15.7	90.1	105.8	4.5	114.8	119.3	20.2	204.9	225.1
Grain elevators	1970	4.4	3.9	8.3	3.7	3.4	7.1	8.1	7.3	15.4
	1971	4.0	7.1	11.1	4.4	3.2	7.6	8.4	10.3	18.7
	1972	10.4	7.0	17.4	5.5	3.7	9.2	15.9	10.7	26.6
Telephone and telegraph	1970	254.4	477.7	732.1	59.5	228.2	287.7	313.9	705.9	1,019.8
	1971	281.3	536.9	818.2	59.9	242.1	302.0	341.2	779.0	1,120.2
	1972	320.6	566.1	886.7	68.4	268.3	336.7	389.0	834.4	1,223.4
Broadcasting ⁶	1970	42.1	20.7	62.8	2.6	5.2	7.8	44.7	25.9	70.6
	1971	30.2	54.3	84.5	2.9	4.9	7.8	33.1	59.2	92.3
	1972	25.0	66.1	91.1	2.8	5.2	8.0	27.8	71.3	99.1
Other utilities ⁷	1970	319.8	208.0	527.8	16.5	113.1	129.6	336.3	321.1	657.4
	1971	469.7	130.1	599.8	13.4	113.8	127.2	483.1	243.9	727.0
	1972	502.6	141.5	644.1	15.7	116.3	132.0	518.3	257.8	776.1
Capital items charged to operating expenses	1970	—	31.0	31.0	—	—	—	—	31.0	31.0
	1971	—	32.3	32.3	—	—	—	—	32.3	32.3
	1972	—	34.4	34.4	—	—	—	—	34.4	34.4
Total, utilities	1970	2,044.5	1,583.6	3,628.1	374.9	842.7	1,217.6	2,419.4	2,426.3	4,845.7
	1971	2,320.7	1,653.8	3,974.5	398.2	863.4	1,261.6	2,718.9	2,517.2	5,236.1
	1972	2,452.6	1,766.2	4,218.8	429.5	917.2	1,346.7	2,882.1	2,683.4	5,565.5

¹ Actual expenditures 1970; preliminary actual 1971; intentions 1972.² Includes expenditures for heavy water plants.³ Capital construction expenditures include on-property exploration and development but exclude outside or general exploration.⁴ Includes expenditures on facilities related to petroleum and gas wells and extraction of petroleum from shales or sands, natural gas processing plants and contract drilling for petroleum and gas. Capital construction expenditures include exploratory and development drilling but exclude geological and geophysical expenditures.⁵ Includes coal mines, asbestos, gypsum, salt, miscellaneous non-metal (incl. potash) and quarrying.⁶ Includes community antenna television and satellite communication systems.⁷ Includes air transport, warehousing, oil and gas pipelines, toll highways and bridges, and provincial and private water systems.14.20 Capital and repair expenditures, by province, 1970-72¹ (million dollars)

Province or territory and year		Capital			Repair			Capital and repair		
		Con- struc- tion	Ma- chinery and equip- ment	Total	Con- struc- tion	Ma- chinery and equip- ment	Total	Con- struc- tion	Ma- chinery and equip- ment	Total
Newfoundland	1970	369	134	503	47	93	140	416	227	643
	1971	497	159	656	43	96	139	540	255	795
	1972	548	161	709	46	100	146	594	261	855
Prince Edward Island	1970	34	20	54	11	7	18	45	27	72
	1971	48	21	69	9	8	17	57	29	86
	1972	57	21	78	10	8	18	67	29	96
Nova Scotia	1970	403	204	607	82	75	157	485	279	764
	1971	377	237	614	89	83	172	466	320	786
	1972	437	160	597	89	85	174	526	245	771
New Brunswick	1970	273	198	471	66	67	133	339	265	604
	1971	281	194	475	69	68	137	350	262	612
	1972	317	151	468	74	71	145	391	222	613
Quebec	1970	2,193	1,225	3,418	596	697	1,293	2,789	1,922	4,711
	1971	2,671	1,300	3,971	582	683	1,265	3,253	1,983	5,236
	1972	2,914	1,542	4,456	604	707	1,311	3,518	2,249	5,767

14.20 Capital and repair expenditures, by province, 1970-72¹ (million dollars) (concluded)

Province or territory and year		Capital			Repair			Capital and repair		
		Con- struc- tion	Ma- chinery and equip- ment	Total	Con- struc- tion	Ma- chinery and equip- ment	Total	Con- struc- tion	Ma- chinery and equip- ment	Total
Ontario	1970	4,127	2,801	6,928	858	1,292	2,150	4,985	4,093	9,078
	1971	4,708	2,721	7,429	915	1,336	2,251	5,623	4,057	9,680
	1972	4,799	2,957	7,756	960	1,397	2,357	5,759	4,354	10,113
Manitoba	1970	575	296	871	120	142	262	695	438	1,133
	1971	577	246	823	120	133	253	697	379	1,076
	1972	638	281	919	127	133	260	765	414	1,179
Saskatchewan	1970	345	258	603	130	132	262	475	390	865
	1971	389	277	666	135	156	291	524	433	957
	1972	404	300	704	138	161	299	542	461	1,003
Alberta	1970	1,431	526	1,957	278	251	529	1,709	777	2,486
	1971	1,482	606	2,088	282	264	546	1,764	870	2,634
	1972	1,530	612	2,142	298	275	573	1,828	887	2,715
British Columbia, Yukon Territory and Northwest Territories	1970	1,569	817	2,386	273	450	723	1,842	1,267	3,109
	1971	2,084	913	2,997	289	473	762	2,373	1,386	3,759
	1972	2,041	890	2,931	309	505	814	2,350	1,395	3,745
Canada	1970	11,319	6,479	17,798	2,461	3,206	5,667	13,780	9,685	23,465
	1971	13,114	6,674	19,788	2,533	3,300	5,833	15,647	9,974	25,621
	1972	13,685	7,075	20,760	2,655	3,442	6,097	16,340	10,517	26,857

¹ Actual expenditures 1970; preliminary actual 1971; intentions 1972.*Sources*

14.1 - 14.3 Central Mortgage and Housing Corporation.

14.4 - 14.9 Population and Housing Sub-division, Census Branch, Statistics Canada.

14.10 - 14.20 Construction Division, Industry Statistics Branch, Statistics Canada.

Chapter 15

Transportation

15.1 Government promotion and regulation

The federal government plays a twofold role in developing transportation services. One is promotional – to ensure the growth and development of the kind of transportation appropriate to the times; the other is regulatory and includes economic regulation of rates and services and also the application of technical regulations to meet safety requirements. The building of canals from the time of Confederation to the construction of the St. Lawrence Seaway; underwriting railway development and branch-line extension; establishing Air Canada; investing in airports and aeronautical installations; and building the Trans-Canada Highway fall within the first category as the stated aim of each was to promote adequate transportation facilities.

The Ministry of Transport and the various Crown agencies reporting to Parliament through the Minister of Transport have jurisdiction over canals, harbours, shipping, civil aviation and interprovincial and international railways. Jurisdiction over for-hire interprovincial or international highway transport also rests with the federal government but these powers are at present exercised by the provincial highway transport boards as provided for in the federal Motor Vehicle Transport Act of 1954 (RSC 1970, c.M-14).

Railway regulation was developed in a period when railways enjoyed a virtual monopoly of transport in the country. Measures to protect the public against excessive charges, unjust discrimination and other objectionable monopoly practices, together with measures to ensure safe operations, have over the years subjected railways to the most comprehensive regulation of any Canadian industry. However, the rapid growth of road, air and pipeline services has ended the monopoly situation for a large part of the total traffic available and forced the railways into a highly competitive situation.

A Royal Commission was appointed in 1959 to inquire into the railway rate structure and other problems. Its findings indicated a need to shift from regulating monopoly to maintaining a balance between the competing modes of transport. Federal legislation based on the findings of the Royal Commission received Royal Assent on February 9, 1967. The National Transportation Act defines a national transportation policy for Canada with a view to achieving an economic and efficient transportation system making the best use of all available modes of transportation at the lowest total cost. The Act established the Canadian Transport Commission (CTC) to carry out the functions formerly performed by the Board of Transport Commissioners for Canada, the Air Transport Board and the Canadian Maritime Commission. In addition, it created a framework within which the CTC might regulate interprovincial and international motor transport as well as the transportation by pipeline of commodities other than oil and gas.

In general, the purpose of the Act is to develop the transportation industry and at the same time protect the public against excessive or discriminatory charges by competition between forms of transport rather than by regulation and control. The railways are relieved of some of the more onerous and outdated restrictions on their freedom to meet competition. On the other hand, a shipper who has no practical alternative to rail shipment can apply to the Commission to have a maximum rate fixed for transporting his goods. The Act also provides a procedure to allow railways, subject to explicit safeguards in the public-interest, to abandon lines and withdraw passenger services where they are no longer needed.

The Canadian Transport Commission has established several committees, four of which, Railway Transport, Air Transport, Water Transport and Telecommunications, exercise the Commission's powers in their respective industries. The Commission is a court of record; its decisions are binding within its jurisdiction and may be reviewed only by appeal to the Supreme Court of Canada on a question of law or jurisdiction with leave of that Court, or by the Governor in Council. However, a party to a licence application under the Aeronautics Act or the Transport Act may appeal to the Minister of Transport.

The Commission has jurisdiction under several Acts, including the Railway Act, the Aeronautics Act and the Transport Act, over transportation by railway, by air and by inland water, and over communication by telephone and telegraph.

Under the Railway Act the Commission has jurisdiction over construction, maintenance and operation of railways that are subject to the legislative authority of the Parliament of Canada, including matters of engineering, location of lines, crossings and crossing protection, safety of train operation, operating rules, investigation of accidents, accommodation for traffic and facilities for service, abandonment of operation and uniformity of railway accounting. The Commission also has certain jurisdiction over telephones and telegraphs, the tolls for which were re-defined by an amendment to the Railway Act in 1970 to include private wire, Telex and broadband exchange services operated by telecommunication carriers under federal jurisdiction. The jurisdiction includes regulation of the telephone tolls of Bell Canada because of the interprovincial nature of the company's operations and tolls for the use of international bridges and tunnels.

Except for certain statutory rates, and subject to certain powers of the Commission to deal with rates that it finds to be contrary to public interest, the railways are free to charge rates as they wish. However, rates must be compensatory, as defined in the Railway Act, and the Commission may prescribe tolls for captive shippers if such tolls take undue advantage of a monopoly situation favouring the railways.

The Commission is responsible for the economic regulation of commercial air services in Canada and is also required to advise the Minister of Transport on matters relating to civil aviation. The regulatory function relates to Canadian air services within Canada and abroad and to foreign air services operating in and out of Canada. It involves licensing all such services and regulating the licensees. The Commission issues regulations dealing with the classification of air carriers and commercial air services, accounts, records and reports, traffic tolls and tariffs, and various other matters. All regulations, rules and orders issued by the former Air Transport Board continue in force until repealed or amended by the Commission.

The CTC takes an active part in the work of the International Civil Aviation Organization and, when appropriate, undertakes bilateral negotiations for the exchange of traffic rights. In 1972, Air Canada and CP Air were Canada's designated international scheduled carriers.

Under the Transport Act, the Commission entertains applications for licences for ships to transport goods or passengers for hire or reward between places in Canada on the Great Lakes and on the Mackenzie and Yukon rivers, except goods in bulk on waters other than the Mackenzie River. Before granting a licence, the Commission studies the need for such transport and afterward retains regulatory powers over tolls to be charged.

The Commission is authorized to investigate complaints about proposed tariffs, under terms of the Pilotage Act, and about existing tariffs under the St. Lawrence Seaway Authority Act, and to make recommendations to the appropriate body. Under the Shipping Conferences Exemption Act, ocean carriers who are members of a shipping conference must file copies of their agreements, tariffs and other such documents with the Commission.

The CTC also administers subsidies paid by the federal government for maintaining certain coastal and inland water shipping services. Table 15.1 shows the net amount of these subsidies paid in the year ended March 31, 1972.

15.2 Rail transport

Canadian railway transport is dominated by two transcontinental systems, supplemented by a number of regional railways. The government-owned Canadian National Railway System is the country's largest public utility and operates the longest track mileage in Canada. It serves all ten provinces as well as the Great Slave Lake area of the Northwest Territories. In addition, it operates a highway transport service, a fleet of coastal steamships, a chain of large hotels and resorts, a telecommunications service, and, as an autonomous subsidiary (Air Canada), a scheduled Canadian and international air service. The Canadian Pacific Railway Company is a joint-stock corporation operating a railway service in eight provinces. Similar to and competitive with the Canadian National Railway System, it is a multi-transport organization with a fleet of inland and ocean-going vessels as well as coastal vessels, a chain of year-round and resort hotels, a telecommunications service, and a domestic and foreign airline service. The British Columbia Railway (formerly the Pacific Great Eastern Railway) operates over a 1,000-mile route from North Vancouver to Fort Nelson in northeastern British Columbia. The Northern Alberta Railway, jointly owned by CP and CN, serves the area north of Edmonton with a 900-mile system. Northern Ontario is served by the provincially owned Ontario Northland Railways with a 600-mile system stretching from North Bay to Moosonee,

and by the privately owned Algoma Central Railway operating over 300 miles of line between Sault Ste. Marie and Hearst.

In 1972 a new US - Canada passenger service was inaugurated by the National Railroad Passenger Corporation (AMTRAK). AMTRAK's first international train — the "Pacific International" — made its initial run July 17, between Seattle, Wash. and Vancouver, BC. Its Montreal to Washington service via New York City, Springfield, Mass., and resort areas in New Hampshire and Vermont began September 29, 1972.

The largest contributors to Canada's total 1971 railway revenue were Canadian National (51.1%) and Canadian Pacific (36.5%). The Quebec North Shore and Labrador Railway, built primarily to transport ore and concentrates from the iron mines of the Schefferville and Wabush areas of Quebec and Labrador to water transportation facilities on the St. Lawrence River, accounted for 2.9% of the revenues. Other railways contributing 1.0% or more of the total revenue figure were the British Columbia Railway (2.1%) and the Ontario Northland (1.1%).

In recent years the railways have faced strong competition from highway and air transport for the movement of people and goods. Still indispensable for carrying bulk commodities, railways are necessary to the development of natural resources located in isolated areas of Canada. Only pipelines have competed with railways in this respect by providing an economical means of transporting the products of oil and gas fields for long distances overland.

The rapid growth of containerization in recent years has made the integration of the services of railway, highway, shipping and other modes of transport of growing importance. However, because Canada's two major railways are already involved in several forms of transportation, they are in an excellent position to meet the challenge of this and other trends appearing in the transportation industry. Canadian railways have evolved over the past century from a position of virtual monopoly in the movement of goods and people by rail, through a highly competitive stage to the present system of co-operation and co-ordination with other modes of transport. The latter approach permits each type of transport to perform the particular function it can do best, thus establishing the most effective and economical system of transportation services possible.

15.2.1 Government aid

In the nineteenth century governments promoted the building of railways to provide transportation and communication across Canada. Private developers received assistance in the form of land grants, cash payments, loans or purchase of shares. Since the formation of the Canadian National Railway System, its debenture issues, except those for rolling-stock, have been guaranteed by the federal government. Provincial governments had guaranteed the bonds of some lines that were later incorporated in the CNR System. As these mature or are called, they are paid off by the CNR in large measure through funds raised by issuing new bonds guaranteed by the federal government. At December 31, 1972, railway bonds guaranteed by the Government of Canada amounted to \$810 million.

The National Transportation Act provides for normal railway subsidy payments of \$110 million for 1967, declining by \$14 million per year, the last payment being \$12 million for 1974. The Act also allows railways to file claims and receive specific payments for losses incurred on branch lines and passenger-train services operated in the public interest. Total payments of \$81.7 million for 1971 represented specific payments to the two major railways, exceeding and replacing their shares of the normal subsidy. Claims for 1972 must be filed by June 30, 1973.

Truckers receive federal assistance through freight rate subsidies similar to the subsidies to railways provided under the Maritime Freight Rate Act. Since 1969 the Atlantic Region Freight Assistance Act has allowed subsidies on goods moved from Nova Scotia, Prince Edward Island, New Brunswick, the island of Newfoundland, and Quebec south of the St. Lawrence River and east of Highway 23 to points in Canada outside that territory. In October 1970 assistance was authorized for goods moved by highway transport within that area as well.

15.2.2 Rail transport statistics

Track mileage and rolling-stock. Total railway track mileage in Canada has changed little since the 1920s. Table 15.2 illustrates the historical development of first main track mileage from 17,657 miles in 1900 to 38,805 in 1920 and to 44,153 in 1971. The same Table presents

statistics on main and other types of track mileage by province and territory and that operated by Canadian carriers in the US for the years 1967-71.

Table 15.3 compares freight and passenger equipment in operation in 1970 and 1971 with that in use in 1960. Privately owned cars, which include cars owned by non-rail industrial firms such as oil, chemical and railway car leasing companies that furnish freight cars to, or on behalf of, any railway line, have increased greatly in number. The figures given of rolling-stock in operation do not reflect, however, the offsetting trend toward larger, more efficient cars and locomotives or the steady improvement in speed of movement facilitated by modernized handling and terminal services. Each year, hundreds of units, particularly freight cars, are converted and modified to make them suitable for specific types of traffic or are replaced by special-purpose equipment designed for distinctive hauling jobs. The average capacity of all freight cars was 59.1 tons in 1971 compared with 51.4 tons in 1960. Also, although the number of diesel-electric locomotives in service has remained fairly constant over this period, it should be noted that an extensive program of power upgrading has been followed by the railway companies.

Revenue freight. Total tonnage of freight carried by all common carrier railways (including national loadings and receipts from US connections) in 1970 and 1971 is shown in Table 15.4 under the commodity structure adopted in 1970 based on Statistics Canada's Standard Commodity Classification. Although there is some loss of continuity with previous data, this new commodity breakdown permits improved comparisons with other series on water transport, imports, exports, etc., which are already based on the Standard Commodity Classification.

Capital structure and finance. Tables 15.5-15.8 give information on capital investment in road and equipment, and on operating revenues, expenses and net income of all common carrier railways operating in Canada, except that of the Cartier Railway which is not available. A Uniform Classification of Accounts has been in operation for the Canadian National and the Canadian Pacific Railways since January 1, 1956 and for other common carrier railways since January 1, 1957. In transportation statistics, a distinction is made between expenditures and expenses. In the following data, the term "expenses" is used as defined in the Uniform Classification of Accounts and refers to the expenses of furnishing rail transportation service and of operations incident thereto, including maintenance and depreciation of the plant used in such service.

The capital structure of the Canadian National Railway System is presented in Table 15.6 and financial details of operations in both Canada and the United States in Table 15.7. Revenues and expenses include those of express and commercial communications and highway transport (rail) operations. To conform to the requirements of the Uniform Classification of Accounts adopted January 1, 1956, tax accruals and rents are charged to operating expenses.

Total operating revenues and expenses of common carrier railways operating in Canada (except the Cartier Railway) continued to rise, both reaching peak levels in 1971; increases over 1970 amounted to 7.5% and 7.9%, respectively (as calculated from Table 15.8). As a result, net operating revenues showed a rise of 11.8% to \$107.5 million.

15.3 Road transport

The federal government establishes motor vehicle safety standards, while registration of motor vehicles and regulation of motor vehicle traffic lie with the legislative jurisdiction of the provincial and territorial governments. An outline of legislation, as well as summaries of motor vehicle and traffic regulations common to all provinces and territories are presented in the following Sections.

15.3.1 Federal safety regulations

The general objective of the Motor Vehicle Safety Act (RSC 1970, c.26, 1st Supp.) is to establish mandatory safety standards for new motor vehicles in order to protect the public from the effects of exhaust emissions and noise. The legislation applies to all new motor vehicles and components manufactured in or imported into Canada, and requires manufacturers to issue notices of safety defects in a prescribed manner. The safety of vehicles in use continues to be a provincial responsibility discharged under existing provincial legislation.

The safety regulations currently include 35 standards relating to the design and performance of passenger cars, trucks, buses, motorcycles, competition motorcycles, minibikes and trailers; six standards limiting motor vehicle exhaust, evaporative and noise emissions; and ten standards applying to snowmobiles. These standards will be reviewed regularly and additions or revisions incorporated to keep pace with engineering or technical advances. The regulations require all Canadian motor vehicle manufacturers or distributors to apply the national safety mark, accompanied by a label certifying compliance with all applicable federal motor vehicle safety standards, to every classified vehicle produced after January 1, 1971. Vehicles imported for commercial or individual use must comply with the Act and Regulations.

15.3.2 Motor vehicle and traffic regulations

Operators licences. The operator of a motor vehicle must be over a specified age, usually 16 years (17 in Newfoundland and generally 18 in Alberta but 16 for certain classes of motor vehicle), and must carry a licence, obtainable in most provinces only after prescribed qualification tests. A licence is renewable annually in Saskatchewan, the Yukon Territory and the Northwest Territories and annually at the end of the licensee's birth month in Manitoba; in Alberta it is renewable every five years but annually where a medical report is required; in British Columbia, it is renewable every five years expiring on the licensee's birth date and classified according to the operations by the licensee; in Quebec, operators and chauffeurs permits are renewable every two years on the holder's birthday; in New Brunswick a licence is renewable every two years and expires at the end of the licensee's birth month; in Newfoundland and Ontario a licence is issued on a three-year basis and expires on the licensee's birth date; and in Nova Scotia a licence is issued on a three-year basis and expires at the end of the licensee's birth month. Prince Edward Island is phasing into a three-year cycle.

Special licences are required for chauffeurs in all provinces except Newfoundland and British Columbia. In the Northwest Territories, persons under 18 but over 16 may obtain a chauffeurs licence at the discretion of the Registrar, on receipt of a letter of approval from the RCMP and a letter from the employer verifying that the licence is necessary for employment. In most provinces, a motorcycle operator is required to pass a special examination and have his driver's licence endorsed authorizing him to operate this class of vehicle or, if he has no driver's licence, he may be issued a licence to operate only a motorcycle. In Alberta a person under 16 but over 14 years of age is permitted to operate a motorcycle with a piston displacement of not more than 100 cc. Under regulations recently adopted in Quebec, all snowmobile operators must hold valid permits issued for that purpose. Operators or chauffeurs permits issued under the Highway Code are considered valid for snowmobiles. Special restrictions apply to minors; ten is the minimum age for obtaining a permit and operating conditions and locations are controlled.

Motor vehicle regulations. Motor vehicles and trailers are usually registered annually with the payment of specified fees. Most motor vehicles carry a registration plate on the front and one on the rear; trailers carry one on the rear.

In most provinces registration plates stay with the vehicle when it is sold, but in Quebec, Manitoba, Saskatchewan and Alberta the owner retains them. In the Northwest Territories a vehicle's registration expires when it changes hands. The owner notifies the Registrar, returns the number plates and the new owner applies to register the transferred vehicle in his name. In Nova Scotia, vehicles change hands by due process of law and title must be secured before plates and permit are issued. A change of ownership must be recorded with the registration authority.

Exemption from registration is granted for a specified period, usually at least 90 days, although the maximum in Quebec is three months for non-residents. In Nova Scotia, a non-resident full-time student residing temporarily in the province may receive, without fee, a driver's licence, plates and permit in exchange for the same valid out-of-province documents; the latter are returned to his home province, state or territory. In Ontario the exemption period is six consecutive months for non-residents from other provinces and three for those with vehicles registered outside Canada. The regulations in Manitoba allow residents to use registration plates from other jurisdictions for 90 days; visitors are exempt from registration if the vehicle is not used for business; and an out-of-province student is exempt if his vehicle is properly registered in his home jurisdiction and he obtains a student sticker for the vehicle's

windshield. In Saskatchewan an out-of-province student is exempt for the school year provided the vehicle is properly registered in his home jurisdiction and, if necessary, he can prove financial responsibility. The Alberta regulations permit non-residents to operate vehicles currently registered in their home province or in the United States for six months; the period is extended to a school year for out-of-province students whose vehicles carry non-resident student stickers. In British Columbia the exemption period is one month; tourists are allowed six months and out-of-province students, a school year, if the vehicles are properly registered in their home jurisdictions.

Safety regulations require vehicles to meet certain mechanical and braking standards and stipulate that equipment include non-glare headlights, a proper rear light, a muffler, a windshield wiper, a rear-vision mirror and a horn. In Ontario and Manitoba, a certificate of mechanical fitness is required before a vehicle sold on the second-hand market can be issued a permit for operation. At the time of sale, used car dealers must certify that the vehicle complies with the provincial equipment requirements. In Alberta the dealer must issue a certificate indicating whether or not the vehicle complies with the prescribed equipment regulations.

Traffic regulations. In all provinces and territories, vehicles keep to the right-hand side of the road. Everywhere motorists are required to observe traffic signs, lights, etc., placed at strategic points on highways and roads. The speed limit in Prince Edward Island, unless otherwise posted, is 60 mph in daytime and 55 at night; in Manitoba, the basic speed limit is 60 mph in daytime and 50 at night unless otherwise posted — speed limits may be raised to 70 mph or modified in semi-built-up areas; in Alberta it is 60 in daytime and 50 at night, with the exception of a few selected sections of four-lane highway where higher speeds may be posted; in Nova Scotia the limit is a “reasonable and prudent” speed, with a maximum of 60 mph except where 65 mph is authorized; in New Brunswick, maximum speeds vary from 50 to 60 mph depending on the type of highway; and in Ontario and Quebec maximum speeds vary from 50 to 70 mph, depending on the type of highway. In the other provinces the maximum speed permitted is normally 50 mph; in Saskatchewan and British Columbia where higher speeds are in effect they are posted. In the Yukon Territory the speed limit for all vehicles is 60 mph, unless otherwise posted. In the Northwest Territories, the highway limit is 60 mph for all vehicles, day or night, except as otherwise posted, and in municipalities it is 30 mph except as posted. Slower speeds are required in cities, towns and villages, at road intersections, railway crossings or at other places or times where the view of the highway for a safe distance ahead is in any way obscured. In Nova Scotia, British Columbia and the Northwest Territories slower speeds are also required in school zones and when passing public playgrounds. Most provinces require vehicles to stop when a school bus is stopped to load or discharge children. Truck speed limits are at least five miles per hour below automobile speed limits, although in Manitoba, Saskatchewan and British Columbia they are the same as for passenger vehicles. In most provinces, accidents resulting in personal injury or property damage in excess of \$200 (\$100 in Quebec where snowmobiles are subject to a similar regulation) must be reported to a police officer (in Nova Scotia to the Registrar of Motor Vehicles or to a police officer; in Quebec to a police officer or to the Motor Vehicle Bureau) and a driver involved must not leave the scene of an accident until he has rendered all possible aid and disclosed his name to the injured party.

Driver licensing controls. All provinces and territories impose penalties for infractions of driving regulations, ranging from fines for minor infractions to suspension of the operator's driving permit, impounding of vehicle or imprisonment for more serious infractions. In most provinces penalties have been linked to a driver-improvement program, the aim of which is to correct faulty driving habits, not to take drivers off the road. The most common driver-improvement program includes the demerit-point system.

Safety responsibility legislation. Each province has enacted safety responsibility legislation. In general, laws provide for the automatic suspension of the driver's licence and motor vehicle registration of a person convicted of a serious offence (impaired driving, driving under suspension, dangerous driving, etc.) or a person whose uninsured vehicle is involved directly or indirectly in an accident resulting in damage in excess of \$200 or injury or death to any person (in Manitoba the amount is \$100 and in Nova Scotia, \$50). In Saskatchewan, Alberta, Quebec and Nova Scotia, if a judgement is rendered for damages against the driver or owner, the driver's licence and registration remain suspended until the judgement is satisfied and, except

in Alberta, proof of financial responsibility for the future is filed. In Saskatchewan and the Northwest Territories uninsured motor vehicles may be impounded following an accident of any consequence, i.e., an accident resulting in personal injury or death, or property damage in excess of \$200. Under the Quebec Code of Civil Procedure, before judgement the plaintiff may seize the motor vehicle which has caused him damage, whatever the amount of property damage, whether covered for third-party insurance or not. In British Columbia, if a judgement is rendered against a driver and not satisfied, the driver's licence may be suspended until reinstated at the discretion of the Superintendent of Motor Vehicles. In the Yukon Territory an inadequately insured vehicle may be impounded if it is involved in an accident, regardless of the property damage.

In Ontario, Manitoba, Alberta and British Columbia the non-resident motorist is not required to carry or produce any form of proof of insurance. In Ontario, the only persons required to file a Certificate of Insurance are those indebted to the Motor Vehicles Accident Claims Fund. If asked by police, registered owners in Nova Scotia must show proof of financial responsibility or face possible prosecution. Conviction results in suspension of both driver's licence and registration until proof of financial responsibility is filed. In British Columbia, Alberta and Manitoba, a compulsory insurance plan is in effect for residents, and drivers may at any time be required to show proof of financial responsibility on demand of a peace officer. In the Northwest Territories proof of insurance must be supplied before vehicle licence is issued, and when the insurance expires or is cancelled vehicle licence plates must be returned to the Registrar of Motor Vehicles. In both the Yukon and the Northwest Territories, certain areas may be exempted from the insurance requirement on order of the Commissioner. In the Northwest Territories, public liability and property damage insurance is compulsory for all vehicles operating on the highways of the Territories regardless of where the vehicle is registered. In Quebec snowmobiles are required to carry insurance in the amount of \$35,000 to cover liability deriving from the use of such vehicle.

Unsatisfied judgement fund. All provinces and territories, except Manitoba, Saskatchewan and the Yukon Territory, have enacted legislation providing for the establishment of a fund, frequently called an unsatisfied judgement fund (in New Brunswick, the Unsatisfied Judgement; in Ontario and Alberta, the Motor Vehicle Accident Claims Fund; and in British Columbia, the Traffic Victims' Indemnity Fund). Judgements awarded for damages arising out of motor vehicle accidents which cannot be collected by the ordinary process of law are paid out of this fund. In Newfoundland, Prince Edward Island, Nova Scotia, Quebec and British Columbia the fund is maintained by insurance companies. In all the other provinces, except Saskatchewan and Manitoba where insurance is compulsory, the funds are obtained by collecting an annual fee from the registered owner of every motor vehicle or from every person to whom a driver's licence is issued. The fee usually does not exceed \$1 per annum; in New Brunswick the fee is \$3 per year; in Ontario a fee of \$25 is paid by the uninsured motorist (in the absence of the fee being paid, the uninsured, if apprehended, is liable to a fine) and, in addition, the fund is subsidized by a \$1 annual charge from each licensed driver.

Some provincial legislation covers payment of judgements in hit-and-run accidents. When these occur, if neither the owner nor the driver can be identified, action may be taken against the Registrar of Motor Vehicles (the Minister of Finance in Newfoundland and the Administrator of the Motor Vehicle Accident Claims Fund in Alberta); any judgement secured against the responsible authority is paid out of the fund. The amount that can be paid out of the fund on one judgement is limited. In Newfoundland and Nova Scotia, the limits are \$10,000 for one person, \$20,000 for two or more persons injured in one accident and \$5,000 for property damage. In Nova Scotia and New Brunswick, the limit is \$35,000 in respect of any one accident. In Prince Edward Island and Quebec, the limit is \$35,000 for all damages in the same accident, subject to a deduction of \$200 from all damage to the property of others; damages resulting in bodily injury or death are, up to \$30,000, payable by priority over damages to property and the latter are, up to \$5,000, payable by priority over the former out of the amount of any insurance or other guarantee of indemnity. In British Columbia, the limit is based on the single amount of \$50,000 for any one accident with the provision that not more than \$5,000 may be paid on a property damage claim until injury claims up to \$45,000 have been satisfied; the \$50,000 limit exists for hit-and-run accidents but does not apply to payments for property damage. In Alberta, the limit is \$35,000 for death or personal injury to one or more persons and

\$5,000 for damage to property, subject to a limit of \$35,000 in any one accident; where, in one accident, claims result from bodily injury to or death of one or more persons and loss of or damage to property, claims arising out of bodily injury or death have priority over claims resulting from loss of or damage to property to the amount of \$30,000, and claims arising out of loss of or damage to property have priority over claims resulting from bodily injury or death to the amount of \$5,000. In Ontario the limits are \$50,000, inclusive of \$5,000 for any property damage claim. Many small claims are handled by the Motor Vehicle Accident Claims Branch (under the Ministry of Consumer and Commercial Relations), subject to a \$50 franchise clause in respect of property damage, but the procedure is such that claims can be settled without resort to litigation. The Minister has the power to act where the defendant is an infant or the defendant owner or driver is deceased.

15.3.3 Road transport statistics

15.3.3.1 Highways, roads and streets

At the end of 1970 Canada had 317,116 miles of highways and rural roads under federal or provincial jurisdictions and 198,806 miles of roads and streets under municipal jurisdiction. Roads in municipalities of less than 1,000 population are now included under municipal rather than rural (Table 15.9). Most of this mileage is in the more populated sections. Roads built by logging, pulp and paper, and mining companies provide some access to remote communities but large areas of most provinces and the territories are still very sparsely settled and are virtually without roads.

Table 15.10 presents expenditure data for all highways, roads and streets in 1969-70 and 1970-71. In 1970-71 total expenditures equalled \$2,101 million; construction expenses and maintenance and administration costs each increased by 7.4%.

15.3.3.2 Motor vehicles

Registrations continue to increase yearly, a record of 9 million being reached in 1971. Of that total, 7 million were passenger cars. Registrations by province are given in Table 15.11 and types of vehicles registered by province in Table 15.12.

Provincial government revenue. The taxation of motive fuels, motor vehicles, garages, drivers, chauffeurs, etc., is an important source of provincial government revenue. In every province, licences or permits issued by the provincial authorities are required for motor vehicles, trailers, operators or drivers, paid chauffeurs, dealers, garages and gasoline and service stations.

The more important sources from which provincial revenue from motor vehicles is derived are shown in Table 15.13. Motive fuel tax rates and federal government revenue from excise and sales taxes are given in Chapter 20.

Sales of motive fuels for motor vehicle use are taxable. To estimate the amount of fuel sold for motor vehicles, tax-exempt sales to the federal government and other consumers, exports and sales on which tax refunds are paid are eliminated from the gross sales. As shown in Table 15.14, consumption of taxable gasoline, which is used almost entirely for automotive purposes, rose 4.4% in 1971 and net sales of diesel oil 17.5%.

Freight carriers. Table 15.15 presents summary statistics on revenues, expenditures, equipment, employees, etc., tabulated from data reported by 1,200 common carriers and 826 contract carriers in 1970 and 1,301 and 913, respectively, in 1969.

Household goods movers and storage operators. In Table 15.16 statistics of movers and storage operators are summarized from data reported in the years 1966-70. In 1970, 263 companies reported a total net revenue of \$2.3 million and investments in land, warehouses, etc., of \$46.6 million.

Passenger buses. The operations of companies predominantly engaged in passenger bus service are summarized in Table 15.17 for the years 1966-71. Data refer to the for-hire segment of the industry. Only firms engaged in intercity and rural operations and having annual gross revenues of \$6,000 or over are covered. Operators predominantly involved in providing school bus service are not included nor are airport servicing and urban transit bus operators. In 1971, 145 carriers reported total net revenues of \$14.2 million and fixed assets of \$118.1 million.

Urban transit systems. Statistical information on urban transit systems presented in Table 15.18 includes operations of motor buses, trolley coaches, streetcars and subway cars carrying passengers in urban and suburban service, 1966-70. There are two subway systems in operation

in Canada: the Toronto subway was officially opened on March 30, 1954 and the Montreal subway began public operation on October 17, 1966.

15.4 Water transport

The Canada Shipping Act (RSC 1970, c.S-9) is the most significant statute dealing with shipping. Other important legislative measures include the Pilotage Act, the Arctic Waters Pollution Prevention Act and the Navigable Waters Protection Act. Under the Canada Shipping Act and its amendments, the Parliament of Canada has complete jurisdiction over the regulation of shipping in Canadian-controlled waters.

15.4.1 Shipping

Except in the case of the coastal trade, all Canadian waterways, including canals, lakes and rivers, are open on equal terms to the shipping of all countries of the world so that Canadian shipping must compete with foreign flag shipping.

The carriage of goods and persons from one Canadian port to another Canadian port, commonly referred to as the coastal trade, is restricted to ships registered in Canada within the region from Havre St. Pierre on the St. Lawrence River upstream to the head of the Great Lakes. Elsewhere in Canada, the coastal trade is restricted to ships registered in a Commonwealth country.

Canadian registry. Under Part I of the Canada Shipping Act, ships in excess of 15 registered net tons and pleasure yachts in excess of 20 tons net must be registered; ships of lower tonnage may be registered or otherwise licensed if powered by a motor of 10 hp or more. Section 6 of the Act restricts ownership to British subjects or corporate bodies incorporated under the law of a Commonwealth country or the Republic of Ireland which have their principal place of business in those countries. Under the British Commonwealth Merchant Shipping Agreement, all Commonwealth ships are designated "British Ship", and non-registered ships that should be registered do not acquire the privileges accorded British ships. Ships in the construction or planning stages may be recorded before registry by a Registrar of Shipping at one of the 75 Ports of Registry in Canada.

Vessels on the Canadian shipping registry. As at December 31, 1972, there were 28,584 ships constituting 3.9 million gross tons registered in Canada. This represents an increase over the previous calendar year of 541 ships and 118,019 gross tons.

Shipping traffic. Table 15.19 shows the number and tonnage of all vessels (except those of less than 15 registered net tons, naval vessels and, for 1962-70, fishing vessels) entering Canadian customs and non-customs ports.

Freight movements through large ports take different forms, including cargoes for or from foreign countries and cargoes loaded and unloaded in coastwise shipping, i.e., domestic freight moving between Canadian points. Table 15.20 presents data by province on cargoes loaded and unloaded from vessels in international or coastwise shipping. In 1970 a total of 290.7 million tons were loaded or unloaded at the principal Canadian ports, compared with 249.0 million tons in 1969. In-transit movement in vessels that pass through harbours without loading or unloading and movements from one point to another within harbours are also numerous in many ports.

Shipping statistics, which cover traffic in and out of both customs and non-customs ports, do not include freight in transit or freight moved from one point to another within the harbour. Table 15.21 shows the principal commodities loaded and unloaded in international and coastwise shipping at the 17 ports handling the largest cargo volumes in 1970. These ports handled 77.9% of all Canada's international shipping and 58.4% of the coastwise trade. The specific commodities shown are those transported in volume and often in bulk form.

15.4.2 Ports and harbours

The ports and harbours of Canada comprise 25 large multi-purpose ports, some 300 smaller ports, and several hundred wharves on the east coast, the Great Lakes, the west coast, in the Arctic, and on interior lakes and rivers.

The administration of Canadian ports is generally under the Ministry of Transport's Canadian Marine Transportation Administration formed in 1970. Canada's harbours are subdivided into National Harbours Board ports, harbour commissions, public harbours, and government wharves.

The National Harbours Board, a Crown corporation, is responsible for administering the Jacques Cartier and Champlain bridges at Montreal, the grain elevators at Prescott and Port Colborne, Ont. and port facilities such as wharves and piers, transit sheds, grain elevators, etc. at the harbours of St. John's, Nfld.; Halifax, NS; Saint John and Belledune, NB; Chicoutimi, Quebec, Trois-Rivières and Montreal, Que.; Churchill, Man.; and Vancouver and Prince Rupert, BC. The number of vessels and the amount of tonnage handled at these ports in 1971 and 1972 are reported in Table 15.22.

The capital values of fixed assets administered by the Board amounted to almost \$420.0 million at December 31, 1971 and \$421.0 million at December 31, 1972; these figures include expenditures on all buildings, machinery and durable plant improvements less deductions for depreciation, and represent a fair approximation of the properties' present value. During 1971, the federal government advanced \$3.1 million to the National Harbours Board for capital expenditures of \$1.1 million at Halifax and \$2.0 million at Vancouver.

Harbour commissions. Eleven of Canada's major multi-purpose harbours are administered by harbour commissions under the general supervision of the Ministry of Transport. These ports include The Lakehead (Thunder Bay), Windsor, Hamilton, Toronto, Oshawa and Belleville, Ont. on the Great Lakes; Winnipeg - St. Boniface, Man. on the Red River - Lake Winnipeg System; Fraser River (New Westminster), North Fraser, Nanaimo, and Port Alberni, BC. The harbour commissions include municipal as well as federal appointees, and are responsible for regular administration, operation, and maintenance as well as for maintaining close liaison with the Ministry of Transport and with the regional and local interests they serve.

Public harbours. More than 300 public harbours are directly administered by the Canadian Marine Transportation Administration. Harbour masters and wharfingers are appointed by the Minister of Transport. Some of the larger public harbours include Sept Îles, Que.; Corner Brook, Nfld.; Sydney and Port Hawkesbury, NS; Sault Ste. Marie and Goderich, Ont.; and Victoria, BC.

Government wharves. The Canadian Marine Transportation Administration is responsible for several hundred government wharves used for commercial and multi-purpose traffic. Most of these are in public harbours. Federal ferry wharves are administered by the Ministry's Canadian Surface Transportation Administration. In addition, provincial governments administer many ferry wharves for intraprovincial services.

The Ministry of Transport is responsible for providing adequate public port facilities to serve commercial interests using water transportation. It also determines when to expand or phase-out facilities in response to economic growth or changes in cargo traffic patterns resulting from new industries, trends to new types of ships, and new developments in freight handling. The Ministry ensures that the intermodal transfer operations of goods and passengers between vessels and shores meet modern standards and that infrastructures are adequate for needs in all parts of Canada. In accord with the National Transportation Policy the Ministry establishes and collects fees from users of port facilities under its jurisdiction.

Private facilities. In addition to public facilities, there are extensive wharf and associated cargo handling facilities owned by private companies, particularly specialized facilities for handling coal, iron ore, petroleum, grain and pulpwood. At Sept Îles, Que. for example, the Iron Ore Company of Canada Limited owns and operates very extensive private facilities to load pelletized iron ore onto ocean-going and Great Lakes vessels. At Port Hawkesbury, NS, Gulf Oil Canada Ltd. operates a terminal to unload tankers of 325,000 tons deadweight or larger; in Quebec City, Canadian Pacific operates a container terminal at Wolfe's Cove; and at Kitimat, BC, the Aluminum Company of Canada Limited operates a multi-purpose terminal to service smelter operations there.

Administrative developments. A task force on harbour administration was set up in 1970 under the Marine Transportation Administration to review the existing port system under the Ministry of Transport and the National Harbours Board. In May 1971, the Minister of Transport announced a new Canadian port policy providing for greater local participation in management at the National Harbours Board ports through new Local Port Authorities. The policy also provided for the establishment of a National Port Council, with membership on a nationwide basis, to act as an over-all advisory body to the Canadian Marine Transportation

Administration. An interdepartmental Ports and Harbours Planning Committee was established by Cabinet to review all major development proposals in National Harbours Board and Commission ports as well as at public harbours and government wharves. The National Port Council met for the first time in September 1972 and will make recommendations to the administrator on many aspects including the future administrative status of ports in Canada.

New developments in shipping. The trend to larger, more sophisticated ships and specialized carriers is continuing. Deep-water oil terminals now in operation at Port Hawkesbury, NS, and Mispic Point, NB, regularly accept tankers of 250,000 tons deadweight or more. Port Hawkesbury handled the largest vessel ever to cross the Atlantic, the 327,000-ton *Universe Japan*. A third such terminal is being completed at Come-by-Chance, Nfld. Dry-bulk carriers of 150,000 tons regularly load at the National Harbours Board terminal at Roberts Bank, under the administration of the Port of Vancouver, and 100,000-ton vessels will shortly be able to reach Quebec City. New facilities at Sept Îles, Que. will soon permit loading of ore carriers up to 250,000 tons.

The role of containerization continues to expand, bringing significant changes in cargo routing and handling. Major container terminals are situated at Saint John, Halifax, Quebec, Montreal and Toronto, and in Vancouver and Fraser River (New Westminster, BC). Both CP Rail and Canadian National operate fast container-trains between these ports and inland centres in Canada and the United States.

The new container ships travel at speeds up to 33 knots and port turnaround time is critical to the economics of operating them. Consequently highly specialized port facilities are constantly being upgraded and made more efficient by the installation of special ramps for roll-on roll-off vessels; large container cranes which can handle 20 or more 15-ton containers per hour; special container packing facilities; large open storage areas for containers, automobiles, lumber, and bulk products such as coal; rail and truck loading and unloading facilities, etc.

Investment in ports is increasing as larger ships require facilities farther from shore, channel dredging, larger turning basins, and more sophisticated systems of navigational and traffic control aids. In addition, environmental considerations often require that the least expensive alternative for terminal construction be rejected in favour of an environmentally more acceptable, but more costly, one.

In addition to these developments, port facilities and ancillary industrial facilities are moving away from urban centres, returning waterfront lands to public residential, commercial and recreational use. In Toronto, for example, the core of the port facilities has gradually moved from the downtown area eastward and an entirely new "outer harbour" basin has been constructed in Lake Ontario. Concurrently, much of the old waterfront property is being filled, and construction of a \$250 million residential, hotel, office, and recreational complex known as Harbour Square is under way.

15.4.3 The St. Lawrence Seaway

Events leading up to the beginning of the St. Lawrence Seaway project and the progress made during the years of its construction are covered in earlier editions of the *Canada Year Book*. The 1956 edition (pp. 821-829) gives detailed information on Great Lakes - St. Lawrence waterway traffic immediately before construction began on the project and the 1960 *Canada Year Book* (pp. 851-860) relates the story of the Seaway during the second year of its operation. The first decade of Seaway development and operations is discussed in the 1969 edition (pp. 841-845).

The St. Lawrence Seaway Authority, constituted as a corporation by Act of Parliament in 1951, undertook the construction (and subsequent maintenance and operation) of Canadian facilities between Montreal and Lake Erie to allow navigation by vessels of 27-foot draft. At the same time, construction of similar facilities in the International Rapids Section of the St. Lawrence River was undertaken by the Saint Lawrence Seaway Development Corporation of the United States. The Seaway was opened to commercial traffic on April 1, 1959 and officially inaugurated on June 26, 1959. With its opening, certain ancillary canals were transferred to the Seaway Authority's jurisdiction for operation and maintenance purposes. These include Lachine (closed in 1971), a section of the Cornwall Canal (closed in 1968), a portion of the third Welland Canal and the Canadian lock at Sault Ste. Marie. Tolls are not assessed against

vessel movements on these waterways and traffic data for them are not included in this Section. Major construction undertaken in 1967 on the channel to bypass the city of Welland is scheduled for completion by the navigation season of 1973.

Seaway traffic. Tables 15.23 and 15.24 give combined traffic statistics for the St. Lawrence and Welland Canals in 1970 and 1971. Duplicate transits are eliminated so that the figures show the actual total movement of goods through the St. Lawrence Seaway.

In 1971, 4,200 ships carrying about 28.2 million tons of cargo moved upbound through the Seaway and 4,228 vessels carrying 42.6 million tons moved downbound. Ocean-going ships carried 29.6% of the total cargoes and lakers 68.5%. Of the total tonnage carried upbound in 1971, 19.9 million tons were domestic cargo and 8.4 million tons were foreign traffic; downbound, 31.7 million tons were domestic freight and 10.9 million tons were carried to and from foreign ports.

On the Montreal - Lake Ontario section, upbound traffic amounted to 26.0 million tons in 1971 and downbound traffic to 26.9 million tons, an increase of 3.5% over 1970. Almost 51.6% of the former was accounted for by iron ore shipped from St. Lawrence ports to Hamilton and Lake Erie and the downbound traffic consisted largely of overseas shipments of wheat. There were 100 fewer upbound transits and 121 fewer downbound transits in 1971 than in 1970 indicating a slight decrease in the number of vessels using this portion of the Seaway. Bulk commodities comprised 83.8% of the total traffic through the section in 1971, the principal commodities through the St. Lawrence canals being iron ore, wheat, manufactured iron and steel, barley, corn, soybeans and fuel oil. Traffic patterns show that 34.3% of the total movement was between Canadian ports, 29.2% between Canadian and United States ports, and 36.4% consisted of foreign trade to and from Canada and the United States. The small remainder was traffic between ports in the United States.

There were 6,854 transits through the Welland Canal in 1971, with a cargo volume of 21.6 million tons upbound and 41.3 million tons downbound; bulk cargo accounted for 87.4% of the traffic. Although many vessels pass through both the St. Lawrence and Welland Canals on "through" trips, there is a substantial amount of local traffic between Great Lakes ports which involves only the Welland Canal. These movements are largely of iron ore, grain and coal. The Welland Canal traffic was 10.0 million tons greater than that reported for the Montreal - Lake Ontario section.

Income of the St. Lawrence Seaway Authority for 1971 amounted to \$27.8 million comprising toll revenue of \$24.4 million assessed for transits through the Seaway locks between Montreal and Lake Erie and sundry revenues (rentals, wharfage, bridge revenue, etc.) of \$3.4 million. Total expenses for 1971 amounted to \$21.9 million of which operation and maintenance expenses amounted to \$15.6 million, regional headquarters, headquarters administration and engineering expenses to \$5.7 million and construction to \$653,523 (Table 15.25).

15.4.4 Federal government marine services

Headquarters organization. The Marine Services of the Ministry of Transport has five branches - Operations, Marine Safety, Marine Pilotage, Marine Finance and Marine Personnel - each headed by a director responsible to the Deputy Administrator, Marine Services, Canadian Marine Transportation Administration. An additional unit, the Marine Emergency Office, also reports to the Deputy Administrator.

The Operations Branch has four divisions - Marine Aids, Canadian Coast Guard, Waterways Development and Telecommunications.

Marine Aids is responsible for planning, policy development and program administration related to a national system of marine aids to navigation and traffic control, and for research and development in these two areas. These responsibilities include the installation, operation and maintenance of electronic navigation systems such as Decca, Loran A and Loran C. They also include the development of port entry systems which involve radar surveillance, traffic control and conventional floating and shore-based aids to navigation. The Marine Aids Division develops standards and guidelines for the operation and maintenance of over 20,000 marine aids to navigation consisting of lightstations, buoys, fog signals and shore-based unattended lights. The Division carries out research and development related to new atomic and solar power sources as well as on conventional battery and hydro sources. The Marine Aids Division is responsible for administering the Navigable Waters Protection Act.

The Canadian Coast Guard Division is responsible for the over-all direction of the Canadian Coast Guard fleet which consists of more than 80 active ships including heavy, medium and light icebreakers, an icebreaker-cable repair ship and two weather-oceanographic ships which alternate in manning Pacific Weather Station "Papa", 900 miles west of Victoria, BC.

The fleet services thousands of lightstations, shore lights, buoys and other navigation aids along Canada's coasts and inland waterways. During the Ministry of Transport's Arctic re-supply operations each summer, Coast Guard ships work in conjunction with chartered commercial vessels to move approximately 500 tons of cargo to five or six northern ports. In the winter, the icebreakers aid commercial shipping in the Gulf of St. Lawrence from Cabot Strait to the Quebec north shore and break ice jams to prevent flooding along the St. Lawrence River, particularly between Trois-Rivières and Montreal.

In addition, Coast Guard ships patrol the St. Lawrence Ship Channel to ensure that it is maintained at its advertised depth; carry out most marine search and rescue operations; and assist other departments doing oceanographic and hydrographic research or investigating Arctic developments. Often a Coast Guard ship is the operational base for the scientific research team.

The Waterways Development Division is responsible for developing national plans, policy and programs to improve commercial navigable waterways and related research, including hydraulic model studies carried out in co-operation with other government agencies.

The Telecommunications Division is responsible for operating a communications and electronics engineering service in support of Marine Services ships and operations, for developing new or improved specialized equipment and for providing electronic navigational systems.

The Marine Safety Branch has three divisions – Steamship Inspection, Nautical Services and Air Cushion Vehicles. The Branch is responsible for administering the parts of the Canada Shipping Act related to operating Canadian ships and ships within Canadian waters; it is charged with the registering of shipping, licensing ships, certifying ships' officers and engaging and discharging ships' crews. Other responsibilities include safety inspection of ships, handling of dangerous cargoes, investigating marine accidents, and applying regulations regarding oil pollution in Canadian waterways.

The Marine Safety Branch protects the interests of the owners of wrecked ships and their cargo and the interests of the Crown in unclaimed wrecks. It has responsibilities for policy formulation in such matters as the coastal trade, the limitation of liability of ship, wharf and canal owners, and the rights and liabilities in disputes between ship owners and cargo owners, stevedores' liens, and salvage claims. The Branch also administers the Maritime Pollution Claims Fund which was established on February 15, 1972.

The Marine Pilotage Branch was established as a separate entity in February 1972 to provide advice on pilotage matters, and is responsible for establishing national technical standards and conducting research required to ensure that these standards are maintained. It is also responsible for prescribing standards for health, uniform financial reporting procedures, procedures for hearings held by Authorities, and recommending the establishment of compulsory pilotage areas where an Authority fails to do so and it is considered to be in the public interest.

The Pilotage Act, which came into force February 1, 1972, established four Regional Pilotage Authorities: Atlantic Pilotage Authority, Laurentian Pilotage Authority, Great Lakes Pilotage Authority, and Pacific Pilotage Authority. Their objectives are to establish, operate, maintain and administer, in the interest of safety, an efficient pilotage service within their respective regions.

The major function of the Marine Emergency Office is the development and execution of oil pollution contingency plans for all territorial waters including those which are contiguous with US waters.

Field organization. In the field, a regional management organization within the Marine Services is being developed to provide the Ministry with more efficient means of matching resources to workloads in all areas. Included in the completed system will be the 11 established district marine agencies, and some 15 other Marine Services field offices that in the past have been reporting individually to Marine Services directors or to the Administrator, Canadian Marine Transportation Administration.

The first step was completed in 1967 with the establishment of the Maritime Region, covering the Maritime Provinces and outlying islands including Sable Island and the Magdalen Islands, and including all marine works, marine operations and marine regulations activities in the three provinces. In 1968, the Western Region, including the Pacific Coast, western and northwestern Canadian waterways and the western Arctic, was established with the same responsibilities as the Maritime Region. Later, Newfoundland (and Labrador) was reorganized using an area concept and reporting through an area manager located at St. John's. The Laurentian Region was established early in 1972 and covers all Marine Services field responsibilities in Quebec. The Central Region was established in the summer of 1972 covering Ontario and Manitoba.

Aids to navigation. Canada's system of aids to navigation is compatible with other North American systems and is installed, operated and maintained as a support service for the safe and expeditious passage of marine commerce and the boating public. The Ministry of Transport maintains lights, buoys, day beacons, radio beacons and two electronic networks operating on the hyperbolic principle — Loran and Decca — in Canadian and contiguous waters. During the year ended March 31, 1971, 4,024 lights, 381 fog signals, 2,436 lighted buoys and 13,317 unlighted buoys and beacons were maintained.

All aids incorporating light or sound devices are listed in the Ministry of Transport annual publication, *List of lights, buoys and fog signals*. Information on radio beacons and on Loran and Decca is published in *Radio aids to marine navigation*. Broadcast *Notices to shipping* and weekly editions of *Notices to mariners* provide additional information on marine hazards and related matters.

Steamship inspection. The Board of Steamship Inspection, established under the Canada Shipping Act, formulates and enforces a variety of regulations made under the Act, the most important of which deal with: approval of design and construction of ships and equipment; inspection during construction and periodically afterward; the carriage of dangerous goods; accident prevention during cargo operations; pollution prevention and control of the marine environment; and training and certification of marine engineers.

The Board's headquarters is in Ottawa; field offices are maintained in the principal ocean and inland ports. Some 2,000 Canadian-owned or registered ships were inspected during the fiscal year ending March 31, 1972.

15.5 Civil aviation

15.5.1 Administration and policy

Administration. Civil aviation in Canada is under the jurisdiction of the federal government and is administered under the authority of the Aeronautics Act and the National Transportation Act as amended. The Aeronautics Act is in three parts. Part I deals with the technical side of civil aviation including matters of aircraft registration, licensing of airmen, establishing and maintaining airports and facilities for air navigation, air traffic control, accident investigation and the safe operation of aircraft. This Part of the Act is administered by the Director General, Civil Aeronautics, under the supervision of the Administrator, Canadian Air Transportation Administration, Ministry of Transport. Part II of the Act deals with the economic aspects of commercial air services and assigns to the Canadian Transport Commission certain regulatory functions respecting commercial air services. Part III deals with matters of internal administration in connection with the Act.

International air agreements. Canada's position in the field of aviation as well as its geographical location makes imperative its co-operation with other nations engaged in international civil aviation. Canada therefore took a major part in the original discussions that led to the establishment of the International Civil Aviation Organization which has headquarters in Montreal, Que. In 1972, Canada had air agreements with 23 other countries.

Federal civil aviation policy. The federal government's objective is to provide an efficient and stable service for the Canadian public within the best possible economic framework for the development of commercial aviation. In formulating its aviation policy in 1964, three basic principles were accepted by the government. The first related to the international field and stated that air services provided by Canadian airlines should serve the Canadian interest as a whole; that these services should not be competitive or conflicting but should represent a

single integrated plan which could be achieved by amalgamation, by partnership or by a clear division of fields of operations. In a further policy statement in June 1965, the Minister of Transport defined more precisely the respective areas of operation of Air Canada and Canadian Pacific Air Lines Limited (CP Air); additional international air services have since been introduced consistent with government policy.

The second principle stated that, although competition was not to be rejected, development of competition should not compromise or seriously injure the economic viability of Air Canada's domestic operations, and if competition continues, opportunity should be ensured for growth to both lines above this basic minimum. In accordance with this principle, the government authorized the Canadian Transport Commission (CTC) to permit CP Air to operate additional transcontinental air services, and to serve Calgary, Edmonton and Ottawa in addition to Vancouver, Winnipeg, Toronto and Montreal.

The third principle concerned the role of regional air carriers providing scheduled service and their relationship with the mainline carriers. Recommendations were prepared by the two major airlines and the larger regional carriers which resulted in a "Statement of principles for regional air carriers" tabled by the Minister of Transport in the House of Commons on October 20, 1966. These principles are summarized as follows: (1) Regional carriers will provide regular route operations into the North and will operate local or regional routes to supplement the domestic mainline operations of Air Canada and CP Air; they will be limited to a regional role. (2) Greater scope will be allowed regional carriers in developing routes and services by the following means: where appropriate, limited competition on mainline route segments of Air Canada or CP Air may be permitted to regional carriers if this is consistent with their local route development; in a few cases, secondary routes at present operated by Air Canada and CP Air may become eligible for transfer to regional carriers; and a larger role will be allotted to regional carriers in connection with the development of domestic and international charter services, inclusive tours and new types of services. (3) Greater co-operation between the mainline carriers and the regional carriers will be developed in a variety of fields, ranging from technical and servicing arrangements to joint-fare arrangements. (4) A limited policy of temporary subsidies for regional routes will be introduced, to be based on a "use it or lose it" formula. (5) Firmer control will be exercised over the financial structure of regional carriers in connection with new licensing arrangements. (6) Regional carriers will be assisted in acquiring aircraft by developing a scheme for consultation between government and the carriers regarding plans for new aircraft, and by a special investigation designed to explore the possibility of developing a joint approach to this problem on the part of the carriers.

In a statement made on August 15, 1969, the Minister of Transport defined more precisely the regions in which each of the five regional carriers would be permitted to supplement, or authorized to replace, mainline operations as circumstances warranted; and authorized the CTC to consult with the mainline carriers and appropriate regional carriers and give urgent consideration to the application of the regional policy. During 1969, the CTC's Air Transport Committee issued a number of decisions authorizing new services by regional air carriers in accordance with the Regional Air Policy, and the Committee is continuing to apply this policy.

Air traffic control. The primary functions of air traffic control in the Ministry of Transport are to prevent collisions between aircraft operating within controlled airspace and between aircraft and obstructions on the manoeuvring area of controlled airports, and to expedite and maintain a safe, orderly flow of air traffic. These functions are carried out by air traffic controllers situated in airport control towers, terminal control units and area control centres.

Airport control service is provided to aircraft operating on the manoeuvring area or in the close vicinity (five to ten nautical-mile radius) of civil airports where the volume and complexity of air traffic indicate its need in the interest of flight safety. Service is also provided to other traffic, such as vehicles and maintenance equipment, on the manoeuvring area of an airport. Radio is the prime means of communication, although light signals may be used where radio is not available. Airport control towers are in operation at: Gander International, St. John's, and Wabush (Labrador), Nfld.; Halifax International and Sydney, NS; Fredericton, Moncton and Saint John, NB; Baie Comeau, Cartierville, Montreal International, Quebec, St. Honoré, St. Hubert, St. Jean and Sept Îles, Que.; Buttonville, Hamilton, London, North Bay, Oshawa, Ottawa International, Sault Ste. Marie, St. Catharines, Sudbury, Thunder Bay, Toronto International, Toronto Island, Waterloo - Wellington and Windsor, Ont.; Brandon,

St. Andrews, Thompson and Winnipeg International, Man.; Regina and Saskatoon, Sask.; Calgary International, Edmonton International, Edmonton Industrial, Grande Prairie, Lethbridge and Springbank, Alta.; Abbotsford, Fort St. John, Kamloops, Kelowna, Langley, Penticton, Pitt Meadows, Port Hardy, Prince George, Vancouver International and Victoria International, BC; Whitehorse, YT; and Yellowknife, NWT.

Terminal control service is provided to aircraft which are "climbing out" after departure from or "letting down" for a landing at an airport. It is a service provided to such flights operating in accordance with the instrument flight rules in order to separate them from one another and from en route aircraft operating through the terminal area which normally is an airspace within 30-50 nautical miles of an airport and which, in some cases, may encompass more than one airport. Radar is normally used, in conjunction with direct controller-pilot radio communication. Procedural means are used at some remote locations where radar is not yet available. The service is provided from all area control centres but separate terminal control units are installed at high traffic density airports where no area control centre is located. Such separate units have been established at Halifax, Quebec City, North Bay, Ottawa, Thunder Bay, Regina, Saskatoon, and Calgary.

Area control service is essentially an aircraft separation and flight-following service provided to aircraft operating en route between airports. All flights that elect to file flight plans are given flight-following service, and separation is provided to all aircraft operating according to the rules for instrument flight or controlled visual flight within designated controlled airspace, i.e., all airways below 23,000 ft above sea level (asl) and all airspace in Canada south of 70° North latitude above 23,000 ft asl. In addition, the service is provided north of 70°N to all aircraft operating above 29,000 ft asl, and to aircraft operating above 5,000 ft over almost all of the western half of the North Atlantic Ocean. Separation is provided using both radar and procedural means, with direct and indirect communication between controller and pilot. An extensive land line communication system links an area control centre with all affiliated airport control towers, terminal control units and communication stations and with adjacent area control centres in Canada and adjoining states, as well as with other agencies providing supporting and auxiliary services or having a need to deal directly with the centre, such as air carrier operation agencies and military operation agencies. Area control centres provide additional services. The Aircraft Movement Information Service assists the Department of National Defence in identifying all aircraft operating in specified areas. The Customs Notification Service facilitates the notification of appropriate customs agencies by pilots planning to cross the Canada - United States border. When necessary, appropriate search and rescue organizations are notified by the Alerting Service. Pilots planning flights receive information such as weather and field reports from the Flight Information Service. Area control centres are located at Gander, Nfld.; Moncton, NB; Montreal, Que.; Toronto, Ont.; Winnipeg, Man.; Edmonton, Alta.; and Vancouver, BC.

Airspace Reservation Service provides reserved airspace for specified operations within controlled airspace and information to other pilots concerning these reservations and military activity areas in controlled and uncontrolled airspace. The Airspace Reservation Coordination Office, located in Ottawa, is responsible for providing the service in all Canadian airspace of Canada and in the Gander Oceanic Control Area.

15.5.2 Commercial air services

The Canadian flag carriers operating international and domestic air routes are Air Canada and CP Air, which together earn 75% of the total operating revenues of Canadian commercial air carriers. The five regional carriers (Eastern Provincial Airways, Nordair, Quebecair, Pacific Western Airlines and Transair) earn 12% of the total operating revenues. The remaining 13% is earned by some 500 smaller airlines, many of them operating in areas of Canada which are relatively inaccessible by surface transport. On international routes, the Canadian flag carriers provide scheduled services to Europe, the Soviet Union, Asia Minor, Japan and Hong Kong, Mexico and South America, the Caribbean, Australia and the United States (including Hawaii). Thirty-one foreign airlines have scheduled services between Canada and other countries.

The Canadian Transport Commission (Air Transport Committee) in its Directory of Canadian Commercial Air Services classifies commercial air carriers into two major groups, domestic and international.

Domestic air carriers, which operate wholly within Canada, are divided into seven classes:

(1) Scheduled carriers provide public transportation of persons, goods or mail to designated points according to a service schedule, at a toll per unit; (2) Regular Specific Point carriers, to the extent that facilities are available, provide public transportation of persons, etc., to points according to a service pattern, at a toll per unit; (3) Specific Point carriers provide public transportation, serving points consistent with traffic requirements and operating conditions, at a toll per unit; (4) Charter carriers offer public transportation from a base specified in the licence, at a toll per mile or per hour for the charter of the entire aircraft, or at such other tolls as may be permitted by the Air Transport Committee; (5) Contract carriers do not offer public transportation, but carry persons or goods solely under contract; (6) Flying clubs are incorporated as non-profit organizations and provide flying training and recreational flying; (7) Specialty carriers operate for purposes not provided by other classes such as aerial photography and survey, aerial distribution (crop dusting, seeding), aerial inspection, reconnaissance and advertising, aerial control (fire control, firefighting, fog dispersal), aerial construction, and air ambulance and mercy services.

International air carriers, which operate between points in Canada and points in any other country, constitute two more classes of carrier: (8) International Scheduled carriers provide public transportation, serving points according to a service schedule, at a toll per unit; and (9) International carriers are domestic and foreign air carriers which operate any commercial service performed by domestic carriers in (2), (3), (4) and (5).

15.5.2.1 Canada's international flag carriers

Air Canada, a Crown corporation incorporated in 1937 as Trans-Canada Air Lines, maintains passenger, mail and commodity services over a network of 89,000 route-miles, extending to 57 destinations in Canada, the United States, the British Isles, Europe and the Caribbean. Affected by recessionary pressures in both North America and Europe, the company's growth was slow in 1971, but economic improvement helped stimulate records in 1972. In 1971, Air Canada carried 7.4 million revenue passengers, virtually unchanged from 1970; in 1972, this figure increased to 8.3 million. A small net income of \$1.7 million was recorded in 1971, compared with a \$1 million loss the year before. Results were expected to be sharply improved in 1972.

The record revenue and traffic performances achieved in 1972 were adversely affected during January and February by strikes that disrupted air traffic control services, and by a one-day walkout of pilots in June to protest hijackings. However, single-day, one-month, and one-year records were established for passenger volumes.

Available seat-miles on scheduled flights increased in 1972 to 12,169 million compared with 11,706 million in 1971. Revenue passenger-miles grew by 23.0% to 7,901 million, a reflection of growth in the long-haul North Atlantic market. Passenger load factor across the system was 64.9%, up from 55.0% in 1971. Total revenue ton-miles increased almost 20.0% to 1,060 million. Air freight continued to show satisfactory growth, expanding by 11.0% in 1972 to 223 million ton-miles. Air mail totalled 35.8 million ton-miles, an 8.0% increase over 1971, and air express grew by 10.8% to 9.8 million ton-miles.

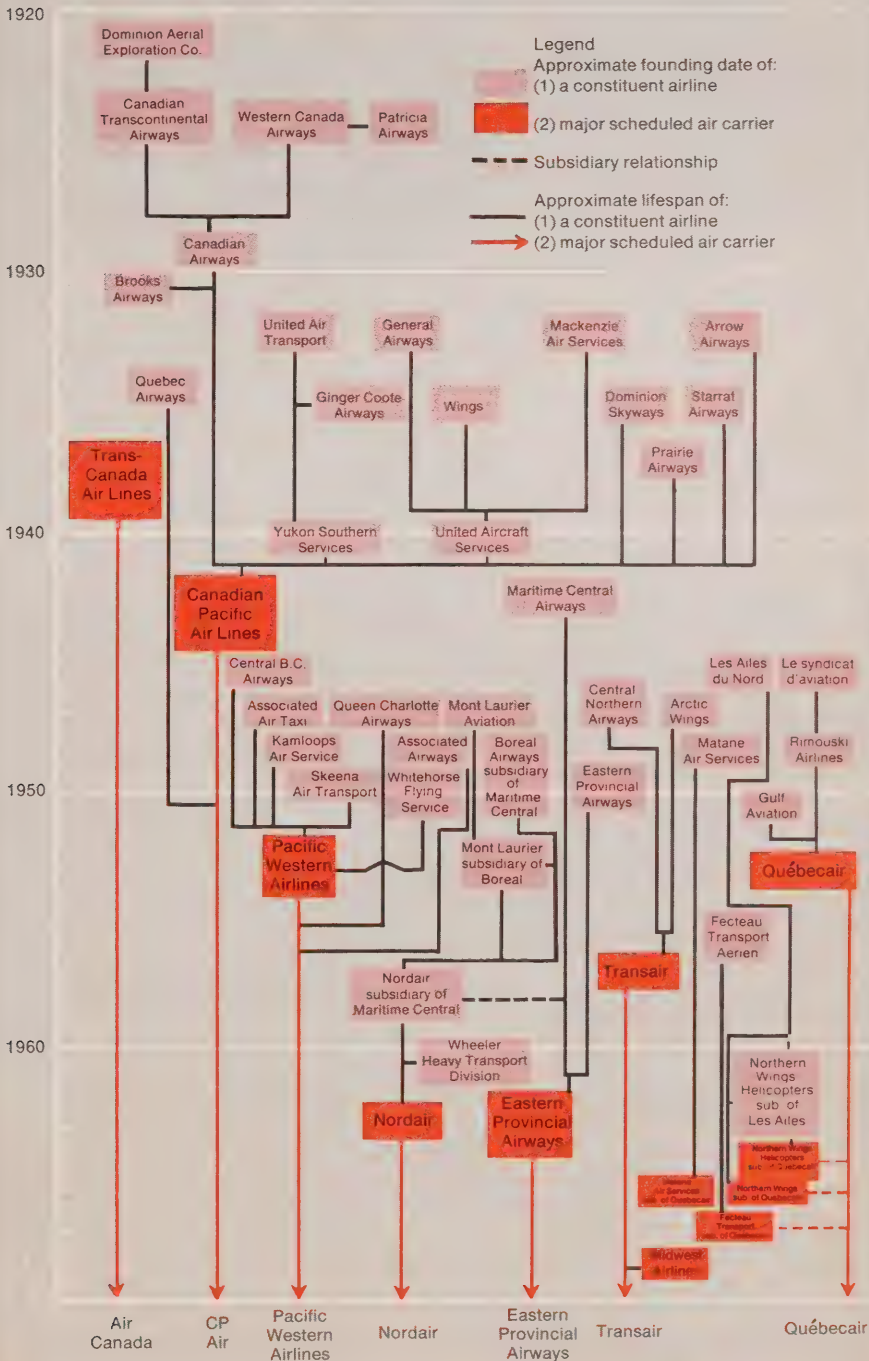
Passenger revenues, which account for 80% of total revenues, amounted to \$410 million in 1971, up from \$387 million in 1970. Total revenues were \$508 million, compared with \$478 million in 1970. Operating expenses in 1971 climbed to \$480 million, compared with \$457 million the previous year.

During the period, Air Canada took delivery of three Boeing 747s and 11 DC-9s, while retiring all Vickers Vanguards and most Vickers Viscounts. At the end of 1972, the operating fleet consisted of 103 aircraft: three Boeing 747s, 38 DC-8s, 47 DC-9s and 15 Viscounts; jets accounted for 98% of all seat-miles provided compared with 90% in 1970. The company will take delivery of five 257-seat Lockheed L-1011 aircraft during 1973 and another five in 1974.

Canadian Pacific Air Lines Limited (CP Air), a private airline, was established in 1942 by integrating ten bushline air carrier companies and has since developed into a major national flag carrier. In 1971, CP Air carried 1.5 million revenue passengers, 2,410.1 million passenger-miles. Operating revenues for the year reached \$154.9 million.

CP Air's network radiates from the company's headquarters at Vancouver to Japan, Hong Kong, the Netherlands, Honolulu, Fiji, Australia, Portugal, Spain, Italy, Greece, Israel, Mexico, Peru, Chile and Argentina. There are regular west coast flights between San Francisco and Vancouver. The airline's operations in the Far East are extremely important to Canada's

Genealogy of the major
scheduled air carriers to 1970



relations with the developing nations in that area. Within Canada, CP Air's transcontinental services link Vancouver, Edmonton, Calgary, Winnipeg, Toronto, Ottawa and Montreal, and the company also operates interior services in British Columbia and the Yukon Territory.

CP Air operates 22 aircraft: seven Boeing 737s, four Boeing 727s and 11 DC-8s. The airline has ordered two Boeing 747 wide-bodied jet aircraft for delivery at the end of 1973.

15.5.2.2 Regional airlines

Eastern Provincial Airways (1963) Limited is the regional carrier for the Atlantic Provinces. In 1972 it carried 377,334 revenue passengers 160.0 million passenger-miles, and 5,248 tons of freight 2.5 million ton-miles. Operating revenues were \$18.5 million, 14% higher than 1971 revenues of \$16.2 million. Scheduled services were operated to Charlottetown, PEI; Moncton - Chatham - Charlo - Fredericton and Saint John, NB; Sydney and Halifax, NS; Deer Lake (Corner Brook) - Gander - St. John's and St. Anthony, Nfld.; Goose Bay - Wabush (Labrador City) and Churchill Falls in Labrador; and Montreal - Sept Îles and the Magdalen Islands in Quebec. The company's fleet at the end of 1972 consisted of three Boeing 737s, three Handley Page Dart Herald, one Carvair and one DC-3.

Nordair Ltée-Ltd., head office Dorval, Que., was established in 1957 by the merger of Mont Laurier Aviation and Boreal Airways. Since its formation, Nordair has expanded steadily and operates scheduled services in Quebec, Ontario and the Northwest Territories, as well as extensive domestic and international charter flights throughout Canada and from eastern Canada to the southern United States and Caribbean islands.

Scheduled services are operated between Montreal, Ottawa, Hamilton, Windsor and Pittsburg and between Montreal, Val d'Or, Fort George, Great Whale and Fort Chimo, Que. and Frobisher Bay and Resolute Bay, NWT. Nordair also maintains an extensive air service based at Frobisher Bay, NWT, supplying numerous Arctic settlements in the Baffin Island area, such as Clyde River-Cape Christian, Broughton Island, Pangnirtung, Cape Dorset, Hall Beach and Igloolik. Applications are before the Air Transport Committee to extend Nordair's services to Yellowknife, NWT, to several points in the general area of the James Bay hydro-electric development project, and before the Danish Civil Aviation authorities to inaugurate regular air service between Frobisher Bay and Sondrestrom-Fjord in Greenland. This latter application already has the approval of the Canadian government.

Nordair's charter flights accommodate inclusive tour travels and group travel. Its northern charter operations are based at Fort Chimo and Frobisher Bay from which points a variety of aircraft, including wheel-, ski- and float-equipped aircraft, are available.

Nordair's fleet is composed of four Boeing 737-200Cs, three Lockheed L-188 turbo-props, five DC-3s, two C-46s, one DC-4, three F-227s, one Twin Otter, one Short Skyvan, one Beaver and one Mallard amphibious aircraft.

Pacific Western Airlines Ltd., with head office at Vancouver International Airport, operates over more than 12,000 route-miles; its services include scheduled mainline local regular unit toll and charter flights in British Columbia, Alberta, Saskatchewan and the Northwest Territories.

Regularly scheduled mainline services are operated north-bound from Edmonton to Prince George, Dawson Creek, BC; Peace River, Fort McMurray, Rainbow Lake, Fort Chipewyan, Alta.; Uranium City, Sask.; Fort Resolution, Hay River, Fort Smith, Fort Simpson, Wrigley, Norman Wells, Inuvik, Yellowknife, Cambridge Bay and Resolute, NWT. The only no-reservations-required AirBus service in Canada operates daily between Calgary and Edmonton, Alta. On the Pacific Coast, mainline services are operated from Vancouver to Comox, Powell River, Campbell River and Port Hardy, Sandspit and Prince Rupert. In the interior region of British Columbia, Pacific Western operates scheduled services from Vancouver to Kelowna, Penticton, Cranbrook, Kamloops and through to Calgary, Alta.; and also Vancouver to Grand Forks, Castlegar, Calgary; and Vancouver, Williams Lake, Quesnel. The company also operates international charter passenger services. Large aircraft charters are operated from the major centres of Vancouver, Edmonton and Calgary. Pacific Western operates extensive freight services, both scheduled and chartered, into the Northwest Territories. Three Lockheed Hercules and a Boeing 320C provide international charter freight services.

In 1971, 1.1 million revenue passengers were carried, revenue passenger-miles totalled 501.1 million, cargo ton-miles were 29.7 million and aircraft miles flown numbered 11.4

million. Comparable figures for 1970 were 887,634, 530.5 million, 26.6 million and 11.5 million, respectively.

Pacific Western Airlines operates 20 aircraft: one Boeing 727, two Boeing 707s, five Boeing 737s, five Convair 640 jet-props, three Lockheed Hercules (freight), two Mallards and two Lockheed Electras (passenger and freight).

Quebecair, with its head office at Montreal, offers scheduled services in Quebec and Labrador. The company was founded in 1946 under the name *Le Syndicat d'Aviation de Rimouski*. The name was changed to Rimouski Airlines in 1947 and to *Quebecair* in 1953 when it was amalgamated with Gulf Aviation. During 1965, Quebecair acquired Northern Wings Limited and Northern Wings Helicopters Limited and in 1967, A. Fecteau Transport Aérien Ltée.

Quebecair is responsible for operating scheduled services and the subsidiaries handle flights by light aircraft, charter and contract services. Scheduled services are operated over 6,000 miles serving some 43 localities in nine economic regions of Quebec and Labrador. Points linked are Montreal, Quebec City, Murray Bay (Charlevoix), Baie Comeau (Hauterive), Churchill Falls (Twin Falls), Gagnon, Wabush (Labrador City), Mingan, Mont Joli-Rimouski, Rivière au Tonnerre, Saguenay (Bagotville), Schefferville, Sept Îles, Senneterre, Mistassini, Temiscaming, Lac Doda, Lac Caché, Lac Mistassini, Rupert River, Fort George, Obedjiwan, Oskelaneo, Manouane, Val d'Or, Amos, Lebel-sur-Quévillon, Rupert House, Chibougamau, Matagami, Blanc Sablon, Saint Paul, Old Fort Bay, St. Augustin, La Tabatière, Tête à la Baleine, Harrington Harbour, Gethsemani, Kégaska, Natashquan, Aguanish, Baie Johan Beetz and Havre St. Pierre. Quebecair also operates group charters within Canada and to the United States, the Caribbean, Bermuda, Mexico and South America, using jet aircraft.

Revenue passengers transported by Quebecair in 1972 numbered 400,845 for 151.0 million passenger-miles, and 3,870 tons of goods were hauled for a total revenue of \$11.3 million.

The combined fleet of Quebecair and its subsidiaries totalled 67 units: three BAC-1-11s, four F-27s, seven DC-3s, one C-46, nine DHC-3 Otters, 11 DHC-2 Beavers, 11 Cessna 180s and 185s, two Dornier 28s, one Beechcraft Queen Air and 18 helicopters.

Transair Limited. This company was formed in November 1969 through the merger of Transair Limited and Midwest Airlines Ltd., both of Winnipeg. With headquarters at the Winnipeg International Airport, the company operates scheduled services in Manitoba, Saskatchewan, Ontario and the Northwest Territories and charter flights throughout Canada and from Canada to the United States, Mexico and the Caribbean. The company's scheduled services are operated in Manitoba — from Winnipeg to The Pas - Flin Flon - Lynn Lake - Thompson and return; from Winnipeg to Gillam - Churchill and return; from Winnipeg to Thompson - Churchill and return; from Winnipeg to Norway House and return; from Winnipeg to Brandon and return; from Winnipeg to Dauphin - Yorkton and return; Eastern — from Winnipeg to Thunder Bay - Toronto and return; from Winnipeg to Kenora - Dryden - Thunder Bay - Sault Ste. Marie - Toronto and return; from Winnipeg to Red Lake and return; and Arctic — from Churchill to Eskimo Point - Rankin Inlet - Baker Lake and return; from Churchill to Coral Harbour - Repulse Bay - Hall Beach and return. Several other points in the Northwest Territories are also served by flights from Churchill.

Transair's fleet comprises 27 aircraft, including 14 helicopters, and ranges from small, single-engined aircraft equipped with wheels, skis or floats for access to remote hinterland and short-airstrip areas, to multi-engine aircraft, including two Boeing 737 twin jets, one Fokker F-28 jet, three Argosy 222 freighters capable of carrying 28,500 lb., three DC-3s, two YS-11s, one HS-748 and one DC-4. Most of the fleet is stationed at Winnipeg but several turbo-prop and piston aircraft are usually positioned at the company's major base at Churchill, Man., in support of its Arctic and DEW-line operations. Since 1961, under contract with the United States Air Force, Transair has operated, from Winnipeg and Churchill, the vertical re-supply flights to the four main sites in the Canadian sector of the DEW-line in the extreme Arctic.

During 1972 services were increased or upgraded to provide more winter charter flights to the Bahamas and Jamaica, two scheduled Boeing 737 flights daily, in and out of Toronto, extended commuter service for Fort Francis - Dryden, and Dryden - Pickle Lake - Sioux Lookout; and expanded Argosy operations in the Arctic. In 1972 Transair contracted with Norcanair to provide high frequency air taxi service between Regina, Saskatoon and Prince

Albert, replacing Transair's turbo-prop service; and Transair introduced turbo-prop service from Kenora, Red Lake and Dryden into Winnipeg.

In 1972 the company flew 5.4 million miles and carried 327,707 passengers 159.0 million passenger-miles, compared with 337,116 passengers for 145.0 million passenger-miles in 1971. Operating revenues equalled \$16.8 million in 1972 and \$15.9 million in 1971.

15.5.2.3 Commonwealth and foreign scheduled commercial air services

At the end of 1972 there were 32 foreign air carriers holding valid Canadian operating certificates and licences issued for international scheduled commercial air services into Canada: Aeroflot (USSR), Aeronaves de Mexico, S.A., Air France, Air Jamaica (1968) Ltd., Alaska Airlines, Inc., Alitalia-Linee Aeree Italiane, Allegheny Airlines Inc., American Airlines Inc., British Overseas Airways Corporation, British West Indian Airways, Czechoslovak Airlines, Delta Airlines Inc., Eastern Air Lines, El Al Israel Airlines Ltd., Hughes Air West, a division of Hughes Air Corporation, Iberia Air Lines of Spain, Irish International Airlines, Japan Air Lines Company Ltd., KLM Royal Dutch Airlines, Lufthansa German Airlines, North Central Airlines Inc., Olympic Airways S.A., Qantas Airways Limited, Sabena Belgian World Airlines, Scandinavian Airlines System, Seaboard World Airlines Inc., Swissair, Transporter Aeroes Portugueses, S.A.R.L., United Air Lines Inc., Western Air Lines Inc. and Wien Consolidated Airlines Inc.

15.5.3 Civil aviation statistics

Ground facilities. Canadian aerodromes are listed in Table 15.26, classified by regions as licensed or unlicensed land facilities or seaplane bases, or military aerodromes. Licensed aerodromes are those that are inspected by Ministry of Transport inspectors at regular intervals and meet specific standards. In addition to aerodromes, a network of radio aids to navigation is maintained to facilitate en route navigation and safe landings under instrument conditions.

Airport activity. In 1971, 6.3 million aircraft movements were recorded at 174 reporting airports, 1.2 million at airports without towers, and 5.1 million at 58 airports with air traffic control towers. Of the latter, the 53 airports with Ministry of Transport towers registered 4.9 million aircraft movements (Table 15.27), the five Department of National Defence airports, 161,183 movements.

In 1971, for the fourth consecutive year, Toronto International airport led in itinerant activity with 165,426 movements; Montreal International retained second place with 148,027; Vancouver International was third with 142,120 and Winnipeg and Ottawa International airports occupied fourth and fifth positions with 114,161 and 93,194 movements, respectively.

At airports with air traffic control towers, aircraft weighing less than 4,000 lb. accounted for 48% of the itinerant movements in 1971, those weighing over 39,000 lb. for 30%. Movements by aircraft of more than 314,000 lb., including the Boeing 747, the DC-8 30-to-60 series, the Ilyushin 62 and the Super VC-10, increased to 53,657 movements or 20% more than in 1970.

There were 205,179 international movements in 1971 (89 fewer than in 1970). Toronto and Montreal International airports reported 57.2% of this total. Toronto handled 65,481, of which 56,506 were "transborder" (to and from the United States) and 8,975 were "other international" (to and from points outside Canada and the United States); Montreal International reported 51,899 international movements of which 35,673 were transborder, 16,226 other international.

According to the 1971 survey, 116 airports without towers handled 1.2 million movements, 13.5% fewer than the 1.4 million total reported by the 113 airports in the 1970 survey. Itinerant movements totalled 421,068, up 0.7% over the 418,236 in 1970; local movements, primarily training flights, numbered 786,375, 19.6% fewer than the 978,961 movements in the previous year.

Commercial air services. Table 15.28 provides statistics on commercial air services conducted in Canada by Canadian, American and other foreign airlines with gross annual flying revenues exceeding \$100,000 in 1967-68 and \$150,000 in 1969-71. Canadian airline figures refer to domestic and international operations; foreign airline figures, to the miles and hours flown over Canadian territory only, excluding passengers and goods in transit through Canada. Table 15.29 gives comparative figures for domestic and international traffic in 1971.

Personnel licences. At March 31, 1972, the total number of personnel licences in force in

Canada was 40,932, compared with 39,479 on the same date in 1971. The 1972 licences were constituted as follows, with comparable 1971 figures in brackets: glider pilots, 908(1,529); private pilots, 26,121(25,237); commercial pilots, 5,139(4,730); senior commercial pilots, 797(744); airline transport pilots, 2,851(2,792); flight navigators, 196(211); air traffic controllers, 1,430(1,025); flight engineers, 107(93); aircraft maintenance engineers, 3,378(3,113); and gyrocopter pilots, 5(5).

15.6 Urban transit

The processes of urbanization and suburbanization continue to concentrate the nation's population in a small number of urban centres. Some three quarters of Canada's population now live in urban areas with about one half in the 20 largest cities and their suburbs. Approximately 50% of all transport activity occurs in urban areas.

The task of reporting transportation statistics for urban and rural areas separately is a difficult one as many transport trips occur between urban and rural points. Also, definitions of the dividing line between urban and rural ones must be arbitrary as they depend on population densities which change with the process of urbanization. It has been easier to maintain transportation statistics by the principal modes — rail, road, water, air — without the added complexity of an urban vs. rural factor.

The demand for adequate transport facilities in urban areas has placed a heavy financial burden on municipalities. Provincial cost-sharing programs which have contributed to the capital and operating costs of transportation systems in urban areas have until recently been strongly oriented to freeways and roads. The federal government also has a large involvement in transport in urban areas through major transport facilities such as ports, airports and rail facilities and services. About 60% of all federal expenditures on transportation are made in urban areas.

Public attitudes toward transport are changing. Attempts to expand road systems have led to adverse public reaction in some cities. Public concern to withhold land from expressway use and to protect the environment is reflected in growing interest in public transit. Some provincial governments have reacted to this situation and taken steps to meet public concern by shifting emphasis away from highway programs and increasing their commitments to public transport systems. In co-operation with the provinces, the federal government has begun a review of its transport policies as they affect urban areas. Changes may be approved relating particularly to federal activities in urban areas connected with port, airport and rail facilities and services.

With growing public interest and increasing involvement by all levels of government, it can be expected that more specialized statistical data will be developed to monitor the complex subject of transport in urban areas.

Sources

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- 15.2 Transportation and Communications Division, Industry Statistics Branch, Statistics Canada.
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 - 15.3.2 Newfoundland Department of Highways; Prince Edward Island Department of Provincial Secretary; Nova Scotia Department of Highways; New Brunswick Department of Provincial Secretary; Quebec Department of Transport; Ontario Ministry of Transportation and Communications and Ministry of Consumer and Commercial Relations; Manitoba Department of Highways; Saskatchewan Highway Traffic Board; Alberta Department of Highways and Transport; British Columbia Superintendent of Motor Vehicles; Yukon Territory Registrar of Motor Vehicles; Northwest Territories Registrar of Vehicles.
 - 15.3.3 Transportation and Communications Division, Industry Statistics Branch, Statistics Canada.
 - 15.4.1 Public Affairs, Ministry of Transport.
 - 15.4.2 Public Affairs, Ministry of Transport; National Harbours Board.
 - 15.4.3 The St. Lawrence Seaway Authority.
 - 15.4.4 - 15.5.1 Public Affairs, Ministry of Transport.
 - 15.5.2 Canadian Transport Commission and the respective airlines.
 - 15.5.3 Public Affairs, Ministry of Transport; Transportation and Communications Division, Industry Statistics Branch, Statistics Canada.
- 15.6 Public Affairs, Ministry of Transport.

Tables

.. not available	e estimate
... not appropriate or not applicable	p preliminary
— nil or zero	r revised
-- too small to be expressed	certain tables may not add due to rounding

15.1 Subsidies paid for maintenance of coastal and inland shipping services, year ended Mar. 31, 1972 (dollars)

Service	Amount paid
WEST COAST	
Gold River — Zeballos, BC	62,498
Vancouver — northern BC ports	518,000
Vancouver — west coast of Vancouver Island	314,998
Vancouver Island — Ahousat freight service	—
Vancouver Island — Kyuquot freight service	—
EAST COAST	
St. Barbe, Nfld. — Blanc Sablon, Que.	141,805
Burnside — St. Brendan's, Nfld.	17,500
Carmanville — Fogo Island, Nfld.	37,057
Cobb's Arm — Change Islands, Nfld.	15,000
Dalhousie, NB — Miguasha, Que.	21,500
Grand Manan and the mainland, NB	259,000
Greenspond — Badger's Quay, Nfld.	32,000
Halifax, NS — Cupids, Nfld.	70,000
Halifax, NS — St. John's, Nfld.	275,000
Île-aux-Coudres — Les Éboulements, Que.	44,000
Île-aux-Grues — Montmagny, Que. (summer)	10,000
Îles de la Madeleine — Montreal, Que.	122,112
Montreal — Quebec — Rimouski — north shore ports, Que.	732,000
Owen Sound — Manitoulin Island, Ont.	41,966
Grindstone (Îles de la Madeleine), Que. — Souris, PEI	325,000
Pele Island and the mainland, Ont.	88,432
Pictou, NS — Charlottetown, PEI — Grindstone, Que.	21,111
Portugal Cove — Bell Island, Nfld.	339,000
Prince Edward Island — Newfoundland	104,412
Wood Island, PEI — Caribou, NS	996,407
Sorel — Île St. Ignace, Que.	50,000
Twillingate — New World Island, Nfld.	71,000
Montreal, Que. — Corner Brook — St. John's, Nfld.	1,532,162
Rivière-du-Loup — St. Siméon, Que.	21,000
Total	6,262,960

15.2 Railway track mileage operated, 1900-71

First main track mileage ¹	Area and type of track	1967	1968	1969	1970	1971
1900	17,657					
1905	20,487					
1910	24,731					
1915	34,882					
1920	38,805					
1925	40,350					
1930	42,047					
1935	42,916					
1940	42,565					
1945	42,352					
1950 ³	42,979					
1955	43,444					
1960	44,029					
1965	43,157					
1966	43,193					
1967	43,168					
1968	43,168					
1969	43,613					
1970	43,983					
1971	44,153					
	First main	936	936	943	944	944
	Newfoundland	252	254	254	254	254
	Prince Edward Island	1,313	1,301	1,301	1,301	1,291
	Nova Scotia	1,667	1,665	1,665	1,665	1,665
	New Brunswick	5,327 ²	5,328	5,329	5,329	5,329
	Quebec	9,979	10,045	10,045	10,038	9,935
	Ontario	4,735	4,746	4,746	4,746	4,746
	Manitoba	8,567	8,565	8,565	8,565	8,565
	Saskatchewan	5,680	5,650	5,950	6,245	6,245
	Alberta	4,315	4,281	4,289	4,370	4,653
	British Columbia	58	58	58	58	58
	Yukon Territory	—	—	129	129	129
	Northwest Territories	339	339	339	339	339
	United States					
	Total, first main	43,168	43,168	43,613	43,983	44,153
	All other	15,362	15,490	15,501	15,646	15,557
	Total⁴	58,530	58,658	59,114	59,629	59,710

¹ Defined as a single track extending the entire distance between terminals, upon which the length of the road is based.
² Includes 190 miles of track of the Cartier Railway which began operations in 1963 but was not included in the statistics until 1967.
³ Newfoundland included from 1950.
⁴ Excludes joint track amounting to 143 miles in 1967, 140 miles in 1968, 141 miles in 1969, 140 miles in 1970 and in 1971.

15.3 Railway rolling-stock in operation as at Dec. 31, 1960, 1970 and 1971

Type	1960	1970	1971	Type	1960	1970	1971
Locomotives	3,752	3,417	3,463	Freight cars	191,553	188,737	187,306
Steam	403	—	—	Automobile	7,249	2,178 ¹	2,280
Diesel-electric	3,308	3,399	3,449	Ballast	3,128	2,639	2,408
Electric	41	18	14	Box	111,217	101,746	99,904
Passenger cars	5,119	2,801	2,516	Flat	12,645	18,043	19,728
Turbo train	..	..	..	Gondola	20,310	20,975	20,354
Power unit cars	..	..	10	Hopper	15,578	24,496	25,175
Coach	..	..	20	Ore	5,930	6,735	6,819
Parlour	..	..	5	Refrigerator	10,076	6,673	5,403
Self-propelled cars	111	122	112	Stock	4,917	2,827	2,687
Coach	1,430	806	707	Tank	472	487	468
Combination	172	74	66	Other	31	1,938	2,080
Dining	149	119	111	Privately owned cars	5,031	16,211	15,560
Parlour	137	128	122	Tank	4,999	14,957	14,207
Sleeping	861	482	464	Other	32	1,254	1,353
Baggage, postal and express	2,218	1,037	870				
Other	41	33	29				

¹ Decrease in 1970 reflects conversion by one major railway of box-type auto cars to ordinary box cars.

15.4 Commodities¹ hauled as revenue freight by railways, 1970 and 1971 (thousand tons)

Commodity	1970	1971	Commodity	1970	1971
LIVE ANIMALS	214	162	Gypsum	4,041	3,912
Cattle	169	140	Limestone	3,930	3,598
Other live animals	46	22	Other crude non-metallic minerals	16,848	16,509
FOOD, FEED, BEVERAGES AND TOBACCO	35,117	37,978	Waste materials	578	669
Meat, fresh or frozen	295	320	FABRICATED MATERIALS, INEDIBLE	65,150	63,864
Other animal products	339	348	Lumber	7,168	7,882
Barley	5,799	6,237	Other wood fabricated materials	2,055	2,079
Wheat	15,664	18,617	Woodpulp and other pulp	5,536	5,181
Other grains	2,270	2,459	Newsprint	5,669	5,469
Milled cereals and cereal products	2,235	2,059	Other paper and paperboard	2,806	2,575
Fruits and fruit preparations	815	644	Chemicals	5,224	5,317
Vegetables and vegetable preparations	1,835	1,488	Potash	5,714	5,982
Sugar	584	640	Other fertilizers	1,950	2,326
Other food and food preparations	1,583	1,536	Petroleum and coal products	13,532	12,900
Animal feed	2,709	2,517	Metals and primary metal products	9,641	8,463
Beverages	936	1,072	Cement	1,675	1,636
Tobacco and tobacco products	55	41	Other fabricated materials	4,179	4,054
CRUDE MATERIALS, INEDIBLE	119,271	118,096	END PRODUCTS, INEDIBLE	7,658	8,628
Crude animal and vegetable materials	2,441	2,925	Road motor vehicles and parts	4,111	4,897
Pulpwood	10,071	10,659	Other end products	3,547	3,730
Other crude wood materials	2,718	2,414	SPECIAL TYPES OF TRAFFIC	5,247 ²	6,347
Textile fibres	137	134	Piggyback (trailer and container) ²	3,052 ²	4,094
Iron ore	49,382	47,840	Freight forwarder	1,314	1,405
Nickel-copper ore	4,452	3,295	Other special traffic	880	848
Bauxite ore and alumina	3,255	3,235	Non-carload shipments ³	1,241	1,335
Other metallic ores	7,386	7,762			
Scrap metal, slags and drosses	2,363	2,340			
Coal	11,410	12,600			
Crude oil and bituminous substances	259	205	Total	233,898 ²	236,410

¹ In this table duplications are eliminated, i.e., freight that is interlined between two or more Canadian railways is counted only once. The statistics do not cover United States operations of Canadian railways except for the Canadian Pacific Railway line through Maine, US, and certain other short mileages which are deemed to be an integral part of the Canadian railway system. Sections of United States railways operating into Canada are regarded as Canadian railways and are included. Freight carried by the Cartier Railway is included in this table; however, financial data for this railway are not available for inclusion in the financial tables.

² Excludes traffic moved in railway-operated containers and trailers.

³ Includes express-rated traffic.

15.5 Capital invested in railway road and equipment property, 1967-71 (thousand dollars)

Investment	1967	1968	1969	1970	1971
Road	107,331	98,532	238,542	142,584	172,002
Equipment	95,014	25,377	44,643	43,599	11,654
General	993	1,139	1,611	1,616	2,227
Undistributed ¹	7,742	60,710	Cr. 4,333	Cr. 24,901	16,600
CNR non-rail property	Cr. 6,250	6,285	4,021	3,889	5,312
CPR " " "	11,574	45,074	Cr. 8,714	Cr. 21,955	Cr. 231
Other " " "	2,417	9,351	360	Cr. 6,835	11,519
Total	211,081	185,758	280,463	162,897	202,483
Cumulative investment to Dec. 31	7,684,813	{ 7,780,572 7,785,980 ²	{ 8,066,442 8,092,143 ³	{ 8,255,040 8,259,309 ⁴	8,461,792

¹ Credit entries in this table result when the annual "write-offs" are greater than the annual investment in any category.

² Restated to reflect transfer of certain non-rail property of one railway to a subsidiary company.

³ Restated to include Government of Ontario (GO) transit, not previously reported.

⁴ Restated to reflect absorption of subsidiary operations into property accounts of one railway.

15.6 Capital structure of the Canadian National Railway System as at Dec. 31, 1967-71 (thousand dollars)

Year	Shareholders' capital		Funded debt held by public		Government loans and appropriations — active assets in public accounts	Total
	Government of Canada shareholders' account	Capital stock held by public	Guaranteed by federal and provincial governments	Other		
1967	1,888,727	4,345	1,196,695	2,024	645,994	3,737,785
1968	1,919,098	4,345	1,130,880	2,024	786,657	3,843,004
1969	1,950,991	4,345	1,049,990	2,024	846,788	3,854,138
1970	1,984,424	4,345	1,042,020	2,024	853,390	3,886,202
1971	2,023,540	4,345	816,276	2,024	1,078,195	3,924,380

15.7 Total revenue, operating expenses, net revenue, fixed charges and deficits of the Canadian National Railway System (Canadian and United States operations), 1967-71 (thousand dollars)

Year	Total operating revenue	Total operating expenses	Income available for fixed charges	Total fixed charges	Net income or deficit ¹	Cash deficit or surplus ²
1967	995,768	986,399	40,268	79,600	Dr. 39,332	Dr. 38,307
1968	1,016,445	989,915	61,413	89,645	" 28,232	" 29,177
1969	1,074,881	1,044,909	73,321	96,908	" 23,587	" 24,646
1970	1,109,139	1,079,596	68,387	98,735	" 30,348	" 29,709
1971	1,211,551	1,175,301	70,014	91,574	" 21,560	" 24,268

¹ Includes appropriations for insurance fund.² Contributed by or paid to the Government of Canada.**15.8 Railway revenues and expenses, 1967-71**

Item and year	Total revenues \$'000	Total expenses (before fixed charges) \$'000	Ratio of expenses to revenues %	Per mile of line			Freight- train revenue per freight train mile \$
				Revenues \$	Expenses \$	Net revenues \$	
All railways							
1967	1,519,393	1,443,956	95.04	35,353	33,598	1,755	18.83
1968	1,528,962	1,437,736	94.03	35,575	33,453	2,122	21.18
1969	1,583,802	1,496,126	94.46	36,474	34,455	2,019	22.10
1970	1,679,759	1,573,579	93.68	38,357	35,932	2,425	22.91
1971	1,805,661	1,698,206	92.07	41,072	38,628	2,444	24.56
CNR							
1967	781,378	768,061	98.30	34,494	33,906	588	17.59
1968	781,192	753,143	96.41	34,372	33,137	1,235	20.36
1969	827,212	791,513	95.68	35,710	34,169	1,541	21.32
1970	852,178	807,986	94.81	36,317	34,434	1,883	22.06
1971	923,012	888,808	96.26	39,388	37,929	1,459	23.84
CPR							
1967	561,571	521,688	92.90	34,614	32,156	2,458	18.70
1968	563,323	521,798	92.63	34,860	32,290	2,570	20.88
1969	580,992	546,105	94.00	35,951	33,793	2,158	21.82
1970	616,846	578,262	93.75	38,230	35,839	2,391	22.33
1971	659,912	613,921	89.45	40,998	38,141	2,857	23.82

15.9 Highway, road and street mileage classified by type and by province, 1970

Province or territory and jurisdiction	Surfaced			Earth	Total
	Rigid pavement	Flexible pavement	Gravel		
FEDERAL AND PROVINCIAL JURISDICTION	2,483	73,010	198,064	43,558	317,116
Newfoundland	—	1,372	3,760	850	5,982
Prince Edward Island	756	830	1,036	623	3,246
Nova Scotia	10	4,901	10,659	76	15,646
New Brunswick	—	5,367	8,058	14	13,439
Quebec	232	16,295	24,757	13,420	54,704
Ontario	1,178	19,336	55,162	3,305	78,981
Manitoba	293	4,059	7,668	45	12,065
Saskatchewan	—	7,445	4,647	1,336	13,428
Alberta	6	6,040	64,401	17,359	87,806
British Columbia	8	7,341	14,557	6,530	28,436
Yukon Territory and Northwest Territories	—	24	3,359	—	3,383

15.9 Highway, road and street mileage classified by type and by province, 1970 (concluded)

Province or territory and jurisdiction	Surfaced			Earth	Total
	Rigid pavement	Flexible pavement	Gravel		
MUNICIPAL JURISDICTION	6,878	31,078	89,352	71,494	198,806
Newfoundland	9	402	636	38	1,085
Prince Edward Island	8	99	27	—	134
Nova Scotia	83	925	259	2	1,269
New Brunswick	51	787	123	22	983
Quebec	1,901	7,504	1,799	198	11,402
Ontario	2,732	10,926	5,286	396	19,340
Manitoba	1,296	563	20,375	12,762	34,996
Saskatchewan	173	1,596	55,169	57,114	114,052
Alberta	480	2,448	2,979	784	6,691
British Columbia	145	5,808	2,631	170	8,754
Yukon Territory and Northwest Territories	—	20	72	8	100

15.10 Construction, maintenance and administration expenditure on highways, rural roads, urban streets, bridges and ferries, by province, years ended Mar. 31, 1970 and 1971 (thousand dollars)

Item and province or territory	Construction		Maintenance and administration		Total expenditure	
	1970	1971	1970	1971	1970	1971
PROVINCIAL AND FEDERAL EXPENDITURE	791,662	795,359	370,282¹	421,583¹	1,161,945¹	1,216,942¹
Newfoundland	35,426	31,616	14,216	16,312	49,641	47,928
Prince Edward Island	8,659	6,357	4,132	4,898	12,791	11,255
Nova Scotia	42,284	42,198	19,264	23,416	61,548	65,614
New Brunswick	25,781	50,903	21,487	25,296	47,268	76,199
Quebec	202,190	221,727	93,822	108,100	296,012	329,827
Ontario	213,852	217,755	101,073	113,553	314,925	331,308
Manitoba	29,208	27,317	16,765	16,845	45,974	44,162
Saskatchewan	43,026	53,493	14,089	16,321	57,115	69,814
Alberta	58,830	57,783	17,755	17,377	76,585	75,160
British Columbia	113,750	67,686	55,922	66,907	169,672	134,593
Yukon Territory and Northwest Territories	18,656	18,525	11,508	12,357	30,164	30,882
MUNICIPAL EXPENDITURE	355,691	436,609	439,422	447,819	795,113	884,428
Newfoundland	1,449	1,216	3,047	3,155	4,496	4,371
Prince Edward Island	484	359	652	591	1,136	950
Nova Scotia	3,836	5,401	4,125	5,292	7,961	10,693
New Brunswick	4,201	6,254	4,850	6,009	9,051	12,263
Quebec	48,873	100,812	54,515	125,646	103,388	226,458
Ontario	184,751	194,366	266,846	183,073	451,597	377,439
Manitoba	16,756	15,977	15,818	23,097	32,574	39,074
Saskatchewan	16,231	18,084	32,682	35,056	48,913	53,140
Alberta	49,849	61,766	36,996	44,393	86,845	106,159
British Columbia	28,771	32,094	19,508	21,090	48,279	53,184
Yukon Territory and Northwest Territories	490	280	383	417	873	697

¹ Includes federal administrative costs re Trans-Canada Highway, not allocated by province, amounting to \$250,000 in 1969-70 and \$200,000 in 1970-71.

15.11 Motor vehicles registered¹, by province, 1967-71

Province or territory	1967	1968	1969	1970	1971
Newfoundland	100,322	108,220	112,027	118,641	129,200
Prince Edward Island	36,844	37,152	38,812	40,233	42,691
Nova Scotia	246,384	276,609	314,547	269,815	310,383
New Brunswick	188,617	198,406	199,980	201,274	216,710
Quebec	1,769,154	1,888,934	1,998,001	2,115,126	2,279,722
Ontario	2,736,366	2,869,588	2,953,789	3,047,599	3,209,862
Manitoba	371,077	380,488	394,975	403,187	419,314
Saskatchewan	467,495	464,017	472,363	464,405	464,924
Alberta	676,270	703,151	735,729	768,759	813,395
British Columbia	887,736	941,935	1,014,301	1,046,697	1,115,028
Yukon Territory	8,583	11,821	11,855	11,371	11,796
Northwest Territories	6,355	6,756	7,781	8,474	9,111
Canada	7,495,203	7,887,077	8,254,160	8,495,581	9,022,136

¹ Registrations given here include passenger cars, trucks, buses, motorcycles, service cars, etc., but not trailers or dealer licences.

15.12 Types of motor vehicles registered, by province, 1971

Province or territory	Passenger cars ¹	Commercial cars, trucks, etc. ²	Buses	Motor-cycles	Total
Newfoundland	104,500	23,500	³	1,200	129,200
Prince Edward Island	32,251	9,443	294	703	42,691
Nova Scotia	234,011	70,773	958	4,641	310,383
New Brunswick	171,567	40,020	1,305	3,818	216,710
Quebec	1,690,802	497,488	15,920	75,512	2,279,722
Ontario	2,713,054	430,371	13,611	52,826	3,209,862
Manitoba	318,821	94,254	269	5,970	419,314
Saskatchewan	277,690	178,763	4,147	4,324	464,924
Alberta	557,913	227,008	4,881	23,593	813,395
British Columbia	856,086	233,603	³	25,339	1,115,028
Yukon Territory and Northwest Territories	10,552	9,217	196	942	20,907
Canada	6,967,247	1,814,440	41,581	198,868	9,022,136

¹ Includes taxis.² Includes service cars, road tractors, farm tractors, etc.³ Included with trucks.

15.13 Provincial revenue from the registration and operation of motor vehicles, by province, year ended Mar. 31, 1971 (dollars)

Province or territory	Passenger automobile licences	Truck, bus, trailer and other vehicle licences	Motor-cycle licences	Chauffeur, driver and dealer licences ¹	Public service vehicle tax	Motive fuel taxes	Total ²
Newfoundland	..	..	..	..	112,565	21,152,248	26,284,522
Prince Edward Island	663,371	451,431	2,611	130,308	36,475	5,724,896	7,167,318
Nova Scotia	6,367,482	5,241,593	³	928,810	180,763	39,499,444	53,274,710
New Brunswick	5,067,721	3,505,278	24,632	508,781	—	32,076,686	42,169,628
Quebec	50,074,331	31,500,867	497,580	5,468,071	2,853,265	297,684,051	400,281,678
Ontario	72,448,253	55,671,589	436,608	4,589,468	7,044,038	409,098,089	580,425,171
Manitoba	6,338,371	5,415,230	30,644	230,231	1,570,639	45,349,293	60,274,940
Saskatchewan	5,896,547	6,470,696	⁴	1,026,258	—	49,685,931	64,862,323
Alberta	10,706,477	12,048,639	⁵	704,971	277,285	77,764,101	104,482,700
British Columbia	19,700,990	16,847,640	⁶	—	508,641	80,778,741	117,836,012
Yukon Territory and Northwest Territories	129,100	283,361	2,041	41,403	77,776	3,571,788	4,311,739
Canada	..	..	..	..	12,661,447	1,062,385,268	1,461,370,741

¹ Operator licences are issued for different periods in different provinces.² Includes other items not shown such as transfer of motor vehicles, garage and service station licences, and fines for infractions of motor vehicle laws.³ Included with other vehicles.⁴ Included with miscellaneous revenues and therefore in total.⁵ Included with passenger automobiles.⁶ Chauffeur and driver licences included with passenger automobiles; dealer licences included with passenger automobiles and trucks.

15.14 Sales of motive fuels, by province, 1967-71 (thousand gallons)

Province or territory	1967	1968	1969	1970	1971
Gasoline and liquefied petroleum gases					
Newfoundland	68,157	74,292	76,961	84,127	92,432
Prince Edward Island	23,979	26,035	27,979	29,980	31,458
Nova Scotia	150,583	163,869	176,437	187,246	196,095
New Brunswick	134,781	142,285	154,164	166,477	172,391
Quebec	1,200,648	1,258,472	1,318,121	1,386,548	1,444,404
Ontario	1,852,183	1,957,921	2,079,405	2,160,216	2,224,647
Manitoba	247,161	259,581	270,971	283,629	287,080
Saskatchewan	368,956	348,403	346,460	341,941	357,584
Alberta	497,667	523,685	551,733	578,914	596,970
British Columbia	534,954	558,722	598,328	634,220	675,806
Yukon Territory and Northwest Territories	11,130	13,994	16,778	19,377	19,683
Total, gross sales	5,090,198	5,327,260	5,617,336	5,872,674	6,098,550
Refunds and exemptions	610,110	569,184	589,072	584,819	579,523
Total, net sales	4,480,088	4,758,076	5,028,264	5,287,854	5,519,027
Diesel oil					
Total, net sales	317,757	343,414	388,116	467,955	549,780

15.15 Summary statistics of motor carriers — freight, 1969 and 1970

Item		Common		Contract	
		1969 [†]	1970	1969 [†]	1970
Carriers reporting	No.	1,301	1,200	913	826
Property account — fixed assets (motor carrier business)	\$'000	537,374	546,899	145,284	154,576
Operating revenues	\$'000	835,458	834,690	176,286	199,726
Operating expenses	\$'000	790,633	804,393	108,609	185,643
Net operating revenues	\$'000	44,825	30,297	67,677	14,083
Fuel consumed					
Gasoline	'000 gal	86,799	75,229	27,320	24,873
Diesel oil	"	92,234	103,428	23,048	24,797
Employees					
Average employed during year	No.	44,497	42,095	9,215	9,125
Total salaries and wages	\$'000	310,488	327,042	62,563	71,343
Working proprietors	No.	529	456	467	384
Equipment					
Trucks with gasoline engines	No.	10,379	10,059	4,096	5,090
Trucks with diesel engines	"	789	1,072	514	547
Road tractors with gasoline engines	"	7,359	6,934	1,621	1,603
Road tractors with diesel engines	"	7,755	8,404	1,888	1,976
Semi-trailers	"	26,246	26,587	4,331	5,393
Trailers	"	3,672	4,159	703	899

15.16 Summary statistics of household goods movers and storage operators, 1966-70

Item		1966	1967	1968	1969	1970
Companies reporting	No.	246	287	316	259	263
Investment in land, warehouses, vehicles, etc.	\$	44,415,161	52,408,118	55,737,683	53,154,421	46,618,163
Revenues	\$	69,010,938	77,893,273	77,988,766	77,507,749	76,845,351
Operating expenses	\$	65,822,360	75,447,004	75,808,295	74,255,639	74,518,503
Net operating revenues	\$	3,188,578	2,446,269	2,180,471	3,252,110	2,326,848
Employees						
Average employed during year	No.	5,927	6,520	6,296	5,902	5,504
Salaries and wages	\$	28,578,027	33,863,279	34,043,804	36,146,901	34,815,722
Storage capacity						
Household goods	cu ft	46,616,388	49,165,489	50,227,473	46,376,445	42,287,598
Other	"	15,764,910	15,921,747	14,794,663	17,480,852	17,193,830
Vehicles						
Trucks	No.	2,082	2,401	2,298	1,951	1,867
Tractors	"	1,037	1,117	1,063	979	930
Semi-trailers	"	1,167	1,212	1,168	1,099	1,064
Trailers	"	51	145	81	50	23

15.17 Summary statistics of intercity and rural passenger bus companies, 1966-71¹

Item		1966	1967	1968	1969	1970	1971
Carriers reporting	No.	158	157	159	154	149	145
Property account — fixed assets	\$'000	78,654	89,301	94,031	93,640	107,220	118,109
Revenues	\$'000	80,429	96,018	92,865	99,795	106,180	117,537
Operating expenses	\$'000	70,171	82,381	83,747	88,769	94,175	103,356
Net operating revenues	\$'000	10,259	13,637	9,118	11,025	12,005	14,180
Traffic and employees							
Passengers							
Regular routes							
Intercity and rural	'000	49,841	51,977	48,697	42,668	46,624	40,619
Urban and suburban	"	4,759	4,012	4,740	4,685	3,463	2,836
Special and chartered service	"	9,054	11,133	11,291	11,824	10,270	10,138
Bus miles							
Regular routes							
Intercity and rural	"	107,560	122,270	112,385	112,645	109,367	115,808
Urban and suburban	"	2,783	2,335	2,604	2,534	1,844	1,747
Special and chartered service	"	14,750	18,351	17,103	21,060	21,008	23,267
Gasoline consumed	'000 gal	3,552	3,332	3,142	3,047	2,983	3,155
Diesel oil consumed	"	13,205	16,531	15,043	15,563	16,088	17,041
Employees							
Average employed during year	No.	5,192	5,651	5,695	5,817	5,610	5,704
Total salaries and wages	\$'000	30,513	36,150	36,588	40,213	42,045	45,877
Working proprietors	No.	46	35	38	43	42	38
Withdrawals of working proprietors	\$'000	197	134	127	175	169	199
Equipment							
Buses	No.	2,746	2,906	2,924	2,869	2,821	2,879
Gasoline	"	1,100	1,087	1,076	1,093	1,012	1,048
Diesel	"	1,646	1,819	1,848	1,776	1,809	1,831

¹ Only carriers with annual gross revenue of \$6,000 or over are included.

15.18 Summary statistics of urban transit systems, 1966-70

Item		1966	1967	1968	1969	1970
Passenger fares ¹	'000	1,036,423	1,084,791	1,055,637	1,050,108	1,018,434
Motor bus	"	706,647	701,373	693,883	700,448	736,447
Trolley coach	"	116,006	117,037	113,794	104,825	41,232
Streetcar	"	96,826	86,039	76,513	67,425	65,079
Subway car	"	104,754	166,767	160,670	166,847	164,080
Chartered	"	9,852	11,417	9,070	8,654	9,705
Intercity and rural services (all types of vehicles)	"	2,338	2,157	1,707	1,908	1,891
Vehicle-miles run	'000	240,318	254,013	257,674	256,550	251,654
Motor bus	"	166,857	168,949	174,306	174,440	175,601
Trolley coach	"	24,545	24,598	24,232	22,145	18,690
Streetcar	"	14,613	13,793	12,741	11,843	11,426
Subway car	"	30,309	40,630	41,419	43,576	41,888
Chartered	"	3,503	5,510	4,436	3,809	3,419
Intercity and rural services (all types of vehicles)	"	490	533	541	737	630
Fuel consumed						
Diesel oil	'000 gal	26,217	28,821	29,513	30,475	31,273
Gasoline	"	6,544	5,857	4,529	4,126	3,090
Liquid petroleum gases	"	247	189	158	169	179
Passenger vehicles in service	No.	8,483	8,737	8,649	8,635	8,426
Motor bus	"	6,103	6,384	6,436	6,616	6,542
Trolley coach	"	989	975	967	870	744
Streetcar	"	688	675	543	446	437
Subway car	"	703	703	703	703	703

¹ Initial revenue passenger fares, excluding transfers.

15.19 Vessels entered at Canadian ports, 1967-71

Year	In international seaborne shipping		In coastwise shipping		Total	
	Vessels	Registered net tons	Vessels	Registered net tons	Vessels	Registered net tons
1967	27,025	97,488,757	95,999	88,639,451	123,024	186,128,208
1968	26,761	102,055,092	89,154	90,767,420	115,915	192,822,512
1969	25,082	98,632,758	88,543	93,883,371	113,625	192,516,129
1970	25,384	108,575,133	80,331	100,935,295	105,715	209,510,428
1971	24,970	114,252,881	68,083	96,274,780	93,053	210,527,661

15.20 Cargoes loaded and unloaded at principal Canadian ports¹ from vessels in international seaborne and coastwise shipping, by province, 1970 with total for 1969 (tons)

Province and port	International		Coastwise		Total 1970	Total 1969
	Loaded	Unloaded	Loaded	Unloaded		
NEWFOUNDLAND	1,741,131	1,699,581	1,459,735	2,140,290	7,040,737	6,681,424
Corner Brook	395,115	177,138	96,114	516,572	1,184,939	938,781
Holyrood	6,552	641,043	447,289	672	1,095,556	1,354,630
St. John's	14,054	150,462	83,302	546,676	794,494	881,810
Botwood	416,265	166,945	—	73,081	656,291	617,924
Stephenville	486,243	5,312	64,598	26,216	582,369	479,532
PRINCE EDWARD ISLAND	72,664	128,604	134,774	430,616	766,658	873,265
Charlottetown	10,304	122,129	128,431	404,218	665,082	759,181
NOVA SCOTIA	6,466,747	6,133,505	3,147,058	2,319,805	18,067,115	17,807,850
Halifax	3,044,300	5,475,957	2,163,303	388,908	11,072,468	10,363,837
Sydney	124,339	372,409	32,140	1,437,217	1,966,105	2,498,083
Hantsport	1,643,267	4,924	—	—	1,648,191	1,933,300
Port Hawkesbury	674,129	244,884	57,050	77,922	1,053,985	871,146
Little Narrows	420,346	—	273,806	—	694,152	524,600
North Sydney	9,184	315	406,297	88,252	504,048	522,450
NEW BRUNSWICK	2,704,270	4,000,883	956,556	1,005,937	8,667,646	8,259,530
Saint John	1,784,234	3,367,495	899,612	349,544	6,400,885	6,138,200
Dalhousie	569,001	240,863	—	72,470	882,334	756,150
QUEBEC	56,421,389	18,791,560	14,624,722	19,337,400	109,175,071	81,530,116
Montreal	5,786,467	5,433,553	6,362,037	4,794,224	22,376,281	17,702,243
Port Cartier	12,967,966	1,256,053	19,233	1,774,155	16,017,407	12,303,605
Quebec	2,689,036	2,306,481	283,115	3,273,657	8,552,289	7,294,541
Baie Comeau	3,792,243	2,309,841	171,743	1,421,888	7,695,715	4,941,159
Sept Îles-Pointe Noire	2,963,867	60,441	3,881,562	565,593	7,471,463	19,102,571
Sorel	2,466,405	617,261	11,856	3,718,295	6,813,817	4,657,219
Port Alfred	633,737	3,872,201	8,375	459,353	4,973,666	4,695,849
Trois-Rivières	1,931,012	1,499,871	44,980	1,478,786	4,954,649	3,405,202
Havre St. Pierre	129,757	—	2,312,743	17,308	2,459,808	1,997,113
Contrecoeur	757,895	653,602	132,059	63,974	1,607,530	1,497,581
Forestville	—	—	781,725	31,902	813,627	880,941
Chicoutimi	830	17,293	8,043	579,221	605,387	593,699

15.20 Cargoes loaded and unloaded at principal Canadian ports¹ from vessels in international seaborne and coastwise shipping, by province, 1970 with total for 1969 (tons) (concluded)

Province and port	International		Coastwise		Total 1970	Total 1969
	Loaded	Unloaded	Loaded	Unloaded		
ONTARIO	10,406,887	24,639,600	24,616,067	19,677,754	79,340,308	65,708,014
Thunder Bay	3,968,283	96,821	15,684,067	1,004,994	20,754,165	13,896,051
Hamilton	361,277	6,609,625	437,559	5,472,662	12,881,123	11,119,409
Sarnia	235,344	3,900,103	2,657,925	5,337,988	7,331,360	4,802,092
Sault Ste. Marie	267,579	3,239,891	258,858	1,986,917	5,753,245	4,267,782
Toronto	268,780	2,799,167	183,572	1,911,385	5,162,904	6,399,650
Port Credit	169,870	3,801,392	406,088	145,288	4,522,638	4,379,354
Windsor-Walkerville	798,160	1,342,423	586,378	823,595	3,550,556	2,784,730
Clarkson	158,515	81,096	326,411	1,932,882	2,498,904	2,134,843
Port Colborne	1,048,037	384,841	149,583	676,884	2,259,345	2,480,205
Colborne	—	—	1,660,245	—	1,660,245	1,418,235
Goderich	558,750	—	511,665	409,716	1,480,131	1,486,610
Pictou	760,167	116,139	303,984	42,224	1,222,514	1,224,061
Little Current	614,942	167,243	31,760	48,923	862,868	1,032,794
Midland	—	31,878	27,000	749,350	808,228	610,171
Depot Harbour	720,901	—	—	—	720,901	705,902
Prescott	—	42,913	167,955	466,769	677,637	565,467
Thorold	150,687	217,830	—	218,731	587,248	710,577
Michipicoten Harbour	22,100	225,149	264,241	45,695	557,185	248,595
MANITOBA	742,384	40,970	24,024	85	807,463	714,907
Churchill	742,384	40,970	24,024	85	807,463	714,907
BRITISH COLUMBIA	27,053,488	3,326,138	18,190,997	18,187,353	66,757,976	67,347,883
Vancouver ²	15,763,242	1,909,706	5,204,479	4,045,854	26,923,281	23,978,076
New Westminster	1,167,421	162,975	1,798,179	1,435,902	4,564,477	4,974,726
Nanaimo	982,929	54,432	167,956	1,286,793	2,492,110	2,718,039
Duncan Bay—Campbell River	272,497	120,875	248,613	1,642,173	2,284,158	2,764,088
Crofton	887,702	4,773	42,388	1,179,197	2,114,060	2,113,837
Victoria	1,116,305	81,502	291,978	581,557	2,071,342	2,438,416
Powell River	348,460	132,444	572,556	730,226	1,783,686	1,996,170
Port Alberni	945,365	7,892	42,602	499,960	1,495,819	1,430,708
Britannia Beach	55,198	—	827,338	496,951	1,379,487	1,285,848
Prince Rupert	701,975	158,971	79,972	427,030	1,367,948	1,339,221
Tasu	1,199,252	—	—	9,348	1,208,600	1,114,302
Port Mellon	5,824	9,295	29,472	979,174	1,023,765	1,268,314
Ladysmith	166,027	—	741,330	98,314	1,005,671	866,263
Kitimat	111,764	408,375	333,651	91,490	945,280	1,357,548
Chemainus	528,172	20,547	198,890	174,452	922,061	658,573
Marble Bay	647,400	—	80,020	—	727,420	495,607
Quatsino	65,576	102,569	370,077	142,076	680,298	337,766
Centre Bay	—	—	344,155	313,910	658,065	770,643
Gold River	120,297	24,530	181,968	289,811	616,606	608,268
Blubber Bay	548,411	—	47,726	797	596,934	588,387
Vananda	258,720	—	291,566	4,246	554,532	1,038,388
Texada	532,800	—	6,288	1,391	540,479	619,755
Beaver Cove	—	—	494,739	12,529	507,268	565,642
NORTHWEST TERRITORIES	—	20,285	229	64,532	85,046	113,839
Total	105,608,960	58,781,126	63,154,162	63,163,772	290,708,020	249,036,828

¹ Only ports handling over 500,000 tons are listed.² Includes Roberts Bank.
15.21 Principal commodities¹ in water-borne cargo loaded and unloaded at ports handling the largest tonnages in 1970 (tons)

Port and commodity	International		Coastwise		Total
	Loaded	Unloaded	Loaded	Unloaded	
SEPT ÎLES - POINTE NOIRE	24,920,825	709,580	3,881,562	565,593	30,077,560
Iron ore and concentrates	24,910,737	—	3,861,346	—	28,772,083
Fuel oil	—	518,982	32	152,963	671,977
Bentonite	—	184,557	—	—	184,557
Other commodities not listed	10,088	6,041	20,184	412,630	448,943
VANCOUVER²	15,763,242	1,909,706	5,204,479	4,045,854	26,923,281
Wheat	3,931,008	—	7,490	—	3,938,498
Coal, bituminous	3,716,024	—	367	—	3,716,391
Pulpwood	287,010	—	2,038,340	66,720	2,322,070
Logs	356,331	15,250	44,714	1,453,169	1,869,464
Sand and gravel	21,050	280,914	5,848	1,395,155	1,702,967
Lumber and timber	930,628	5,089	310,490	196,887	1,443,094
Sulphur in ores	1,358,911	—	21,771	—	1,380,682
Fuel oil	108,894	143,905	992,930	692	1,246,421
Potash	1,190,704	16	450	—	1,191,170
Barley	951,483	—	—	—	951,483
Newsprint	40,199	—	701	458,796	499,696
Rapeseed	492,014	—	2,068	—	494,082
Pulp	241,006	1,971	8,705	229,769	481,451
Hogged fuel	8,900	—	425,388	5,950	440,238
Gasoline	31,403	—	378,392	127	409,922
Salt	1	306,480	75,660	5	382,146
Waste and scrap, n.e.s.	67,999	491	252,747	11,240	332,477
Asbestos	100,895	151,291	500	—	252,686

15.21 Principal commodities¹ in water-borne cargo loaded and unloaded at ports handling the largest tonnages in 1970 (tons) (continued)

Port and commodity	International		Coastwise		Total
	Loaded	Unloaded	Loaded	Unloaded	
VANCOUVER (concluded)					
Inorganic chemicals	30,699	16,506	201,152	3,977	252,334
Flaxseed	179,991	17	—	—	180,008
Cement	59,805	20,571	8,705	79,234	168,315
Fertilizers, n.e.s.	121,223	3,192	4,020	7	128,442
Hulls, screenings, chaff	123,456	—	—	—	123,456
Machinery, n.e.s.	3,160	30,872	68,105	13,054	115,191
Raw sugar	—	111,810	—	—	111,810
Other commodities not listed	1,410,448	821,331	355,936	131,072	2,718,787
MONTREAL					
Fuel oil	5,786,467	5,433,553	6,362,037	4,794,224	22,376,281
Wheat	407,183	1,652,219	4,069,987	148,789	6,278,178
Barley	1,363,929	34,599	—	2,209,708	3,608,236
Gasoline	1,264,950	75,264	—	1,281,577	2,621,791
Raw sugar	—	359,899	1,437,123	55,583	1,852,605
Salt	—	429,968	—	—	429,968
Asbestos	5,119	113,937	25	268,152	387,233
Coal, bituminous	342,739	5,118	3,499	509	351,865
Plate and sheet steel	158	337,322	45	3,332	340,857
Corn	76,998	85,389	5,611	129,159	297,157
Gypsum	54,344	197,417	—	17,028	268,789
Structural shapes	1	8	—	263,929	263,938
Wheat flour	43,211	86,219	78,442	4,015	211,887
Lubricating oil and grease	166,165	112	2,138	598	169,013
Organic chemicals, n.e.s.	55,260	9,947	138,825	18,511	167,967
Bars and rods, steel	28,898	74,698	23,626	7,135	160,719
Soybeans	65,686	105,363	1,290	17,226	152,777
Crude petroleum	—	63,519	7,384	15,265	151,854
Pulp	148,496	142,677	6,144	—	148,821
Machinery, n.e.s.	40,169	33	—	—	148,529
Manganese ore	17,077	58,169	32,045	7,352	137,735
Other commodities not listed	1,705,400	97,798	20,899	—	135,774
THUNDER BAY					
Wheat	3,968,283	96,821	15,684,067	1,004,994	20,754,165
Iron ore and concentrates	86,928	—	8,160,169	—	8,247,097
Barley	2,739,395	—	3,026,888	—	5,766,283
Coal, bituminous	488,600	—	2,964,206	—	3,452,806
Oats	—	42,899	445,248	—	488,147
Flaxseed	128,579	—	320,967	—	449,546
Fuel oil	54,157	—	260,681	—	314,838
Newsprint	—	—	—	244,840	244,840
Rapeseed	201,683	—	—	—	201,683
Hulls, screenings and chaff	65,596	—	123,571	—	189,167
Gasoline	81,950	—	100,387	—	182,337
Plate and sheet steel	—	9,251	31	155,627	155,627
Pulpwood	3,500	—	—	126,879	136,161
Other commodities not listed	117,895	44,671	281,919	102,500	106,000
PORT CARTIER					
Iron ore and concentrates	12,967,966	1,256,053	19,233	1,774,155	16,017,407
Wheat	9,956,921	—	7,201	—	9,964,122
Barley	1,866,305	343,854	—	1,314,018	3,524,177
Soybeans	428,949	77,513	—	374,372	880,834
Corn	342,224	341,212	—	17,041	700,477
Fuel oil	311,437	384,444	—	—	695,881
Other commodities not listed	—	107,925	10,166	15,032	133,123
HAMILTON	62,130	1,105	1,866	53,692	118,793
Iron ore concentrates	361,277	6,609,625	437,559	5,472,662	12,881,123
Coal, bituminous	13	1,603,710	—	4,381,683	5,985,406
Fuel oil	—	4,306,790	—	177,085	4,483,875
Plate and sheet steel	—	82,051	—	564,488	646,539
Wheat	121,151	12,784	189,936	1,522	325,393
Petroleum coal products	—	—	102,821	117,415	220,236
Soybeans	107,219	67,621	4,410	999	180,249
Other commodities not listed	—	137,206	—	5,192	142,398
HALIFAX	132,894	399,463	140,392	224,278	897,027
Crude petroleum	3,044,300	5,475,957	2,163,303	388,908	11,072,468
Fuel oil	—	3,905,516	—	—	3,905,516
Gypsum	437,831	1,284,919	1,482,387	74,144	3,279,281
Gasoline	1,691,584	14	4,722	—	1,696,320
Wheat	3,048	29,041	607,078	120,000	759,167
Other commodities not listed	332,881	924	147,649	47,115	481,454
QUEBEC	578,956	256,467	68,192	—	950,730
Fuel oil	2,689,036	2,306,481	283,115	3,273,657	8,552,289
Wheat	22,725	1,103,046	157,173	746,110	2,029,054
Gasoline	442,912	96,429	2,815	404,908	947,064
Barley	—	203,944	89,012	601,511	894,467
Soybeans	314,315	197,131	1,952	340,927	854,325
Pulpwood	350,876	431,197	—	52,167	834,240
Zinc ore concentrates	—	—	—	795,320	795,320
Newsprint	498,258	—	—	—	498,258
Flaxseed	292,649	—	206	—	292,855
Corn	113,553	17,151	—	108,525	239,229
Asbestos	33,500	145,970	—	12,633	192,103
Other commodities not listed	127,825	2	489	—	128,316
Other commodities not listed	492,423	111,611	31,468	211,556	847,058

15.21 Principal commodities¹ in water-borne cargo loaded and unloaded at ports handling the largest tonnages in 1970 (tons) (concluded)

Port and commodity	International		Coastwise		Total
	Loaded	Unloaded	Loaded	Unloaded	
BAIE COMEAU	3,792,243	2,309,841	171,743	1,421,888	7,695,715
Wheat	1,460,468	542,958	—	707,069	2,710,495
Corn	543,452	554,386	—	—	1,097,838
Soybeans	564,242	521,939	—	—	1,086,181
Pulpwood	266,944	28,124	120,348	—	415,416
Alumina and bauxite ores	—	327,383	—	—	327,383
Newsprint	316,763	—	—	—	316,763
Fuel oil	—	76,282	—	135,221	211,503
Flaxseed	82,850	16,609	—	54,451	153,910
Aluminum	92,161	—	35,261	—	127,422
Other commodities not listed	465,363	242,160	16,134	525,147	1,248,804
SARNIA	235,344	3,900,103	2,657,925	537,988	7,331,360
Coal, bituminous	—	3,376,555	—	22,400	3,398,955
Fuel oil	56,044	26,080	1,372,238	128,521	1,582,883
Gasoline	—	—	852,985	—	852,985
Wheat	—	—	140,999	190,175	331,174
Limestone	—	323,906	—	—	323,906
Lubricating oil and grease	—	4,110	16,657	119,066	139,833
Organic chemicals, n.e.s.	94,697	43,365	1,040	51	139,153
Inorganic chemicals, n.e.s.	—	22,405	109,116	—	131,521
Petroleum coal products	6,350	50,544	22,244	30,235	109,373
Other commodities not listed	78,253	53,138	142,646	47,540	321,577
SOREL	2,466,405	617,261	11,856	3,718,295	6,813,817
Titanium ore	—	—	—	2,311,904	2,311,904
Wheat	974,513	—	—	1,018,565	1,993,078
Slag, drosses, by-products	622,579	—	—	—	622,579
Pig iron	547,673	—	5,321	—	552,994
Fuel oil	—	59,097	—	229,851	288,948
Phosphate rock	—	279,502	—	—	279,502
Coal, n.e.s.	—	242,972	—	—	242,972
Other commodities not listed	321,640	35,690	6,535	157,975	521,840
SAINT JOHN	1,784,234	3,367,495	899,612	349,544	6,400,885
Crude petroleum	—	2,565,564	—	—	2,565,564
Fuel oil	—	306,598	576,854	203,867	1,087,319
Wheat	501,840	—	—	—	501,840
Gasoline	—	—	291,513	125,054	416,567
Raw sugar	—	250,589	—	—	250,589
Wheat flour	215,970	—	6,716	—	222,686
Pulp	212,685	—	312	—	212,997
Pulpwood	200,864	—	—	—	200,864
Newsprint	136,893	20	—	—	136,913
Fresh fruits and berries	100,177	218	—	—	100,395
Potatoes	59,904	—	19	—	59,923
Other commodities not listed	355,901	244,506	24,198	20,623	645,228
SAULT STE. MARIE	267,579	3,239,891	258,858	1,986,917	5,753,245
Coal, bituminous	—	2,322,370	—	27,000	2,349,370
Iron ore and concentrates	—	380,382	—	1,508,117	1,888,499
Limestone	—	485,676	—	—	485,676
Fuel oil	—	15,759	—	288,007	303,766
Plate and sheet steel	57,924	—	91,263	4	149,191
Gasoline	—	—	—	113,911	113,911
Other commodities not listed	209,655	35,704	167,595	49,878	462,832
TORONTO	268,780	2,799,167	183,572	1,911,385	5,162,904
Coal, bituminous	—	1,615,215	—	—	1,615,215
Fuel oil	141	172,907	98,198	635,445	906,691
Cement	6,190	1,049	—	449,239	456,478
Soybeans	55	335,555	—	22,945	358,555
Salt	—	88,369	—	204,755	293,124
Wheat	—	—	—	216,466	216,466
Gasoline	—	—	83,096	124,829	207,925
Raw sugar	—	150,255	—	4,064	154,319
Other commodities not listed	262,394	435,817	2,278	253,642	954,131
PORT ALFRED	633,737	3,872,201	8,375	459,353	4,973,666
Alumina and bauxite ores	—	2,825,535	—	—	2,825,535
Fuel oil	—	634,592	—	—	634,592
Newsprint	298,417	—	—	—	298,417
Coke	789	296,034	—	—	296,823
Aluminum	287,555	—	3,942	—	291,497
Pulpwood	—	—	—	220,500	220,500
Fluorspar	—	—	—	160,077	160,077
Other commodities not listed	46,976	116,040	4,433	78,776	246,225
NEW WESTMINSTER	1,167,421	162,975	1,798,179	1,435,902	4,564,477
Pulpwood	127,617	—	1,044,698	15,060	1,187,375
Lumber and timber	625,900	483	42,392	93,374	762,149
Logs	14,675	2,424	4,830	675,689	697,618
Sand and gravel	—	4,101	490,668	24,232	519,001
Limestone	—	—	2,400	314,308	316,708
Waste and scrap, n.e.s.	16,424	—	79,424	122,050	217,898
Cement	16,000	—	4,350	107,607	127,957
Other commodities not listed	366,805	155,967	129,417	83,582	735,771
PORT CREDIT	169,870	3,801,392	406,088	145,288	4,522,638
Coal, bituminous	—	3,801,392	—	—	3,801,392
Fuel oil	56,540	—	113,493	—	170,033
Other commodities not listed	113,330	—	292,595	145,288	551,213

¹ Only commodities totalling over 100,000 tons are listed.² Includes Roberts Bank.

15.22 Vessels and tonnage handled by harbours administered by the National Harbours Board, 1971 and 1972

Port or elevator and year		Vessel arrivals	Vessel tonnage	Cargo tonnage	Grain elevator shipments bu
St. John's, Nfld.	1971	1,917	1,875,701	868,541	...
	1972	2,209	2,184,318	1,170,964	...
Halifax	1971	2,611	8,131,883	11,307,747	19,897,496
	1972	2,537	9,154,030	12,186,272	21,801,617
Saint John	1971	1,950	6,691,127	5,803,304	15,577,894
	1972	2,090	9,681,994	5,985,330	20,691,195
Belledune, NB	1971	50	192,100	247,653	...
	1972	34	156,041	331,474	...
Chicoutimi	1971	151	296,559	635,561	...
	1972	153	350,600	725,050	...
Quebec	1971	2,001	7,538,000	11,060,221	73,460,788
	1972	1,932	8,333,000	15,580,353	70,689,819
Trois-Rivières	1971	1,194	3,137,044	3,896,468	39,662,176
	1972	1,129	3,134,409	4,135,200	40,511,799
Montreal	1971	5,668	26,484,962	23,766,460	150,134,947
	1972	5,358	26,295,288	22,144,328	124,838,319
Prescott	1971	...	...	...	11,166,206
	1972	...	...	...	14,016,619
Port Colborne	1971	...	...	...	5,755,972
	1972	...	...	...	6,547,482
Churchill	1971	58	319,601	792,671	25,945,079
	1972	48	302,185	771,603	26,266,241
Vancouver	1971	18,377	27,583,488	35,301,753	274,660,050
	1972	18,093	28,736,053	36,712,508	286,711,007
Prince Rupert	1971	1,065	1,688,730	1,256,411	13,121,061
	1972	989	1,636,173	1,526,153	19,458,062
Total	1971	35,042	83,939,195	94,936,790	629,381,669
	1972	34,572	89,964,091	101,269,235	631,532,160

15.23 Summary statistics of St. Lawrence Seaway traffic¹, 1970 and 1971

Item	Upbound		1971		Downbound		1971	
	1970		1970		1970		1971	
	No. of transits	Cargo tons	No. of transits	Cargo tons	No. of transits	Cargo tons	No. of transits	Cargo tons
Type of vessel								
Ocean								
Cargo	997	5,406,133	1,244	7,983,084	1,022	7,974,311	1,249	10,600,479
Tanker	77	590,172	60	373,767	74	321,529	60	311,305
Inland								
Cargo	2,182	17,826,587	1,917	16,387,587	2,166	33,656,805	1,896	30,432,151
Tug and barge	48	56,220	53	22,173	54	99,927	50	117,852
Tanker	710	3,478,381	613	2,904,122	728	807,253	615	698,090
Coastal								
Cargo	63	260,753	77	361,910	63	260,386	82	326,997
Tug and barge	67	144,474	31	77,936	57	124,857	39	87,536
Tanker	14	101,698	8	98,213	7	4,186	4	—
Non-cargo								
Tug and barge	96	—	82	—	89	—	75	—
All other ²	288	—	115	—	313	—	158	—
Total	4,542	27,864,418	4,200	28,208,792	4,573	43,249,254	4,228	42,574,410
Type of cargo								
Bulk	2,002	22,628,877	1,703	20,310,677	2,787	40,643,347	2,653	40,559,586
General	717	4,621,019	913	5,897,689	197	997,439	161	470,233
Mixed	213	614,522	233	1,000,426	363	1,608,468	372	1,544,591
Passengers	83	—	—	—	82	—	7	—
In ballast								
Ocean	144	—	185	—	78	—	109	—
Laker	1,063	—	947	—	713	—	660	—
Coastal	19	—	21	—	33	—	36	—
Other	301	—	198	—	320	—	230	—
Type of traffic								
Domestic								
Canada to Canada	1,536	7,326,601	1,364	7,244,994	1,866	15,000,107	1,717	16,339,457
Canada to United States	1,573	14,217,606	1,350	12,255,378	9	22,356	10	20,863
United States to Canada	13	42,455	28	153,827	1,243	19,278,581	1,006	14,706,141
United States to United States	345	281,451	154	197,742	358	652,370	186	596,165
Foreign								
Canada								
Import	211	813,677	221	716,445	—	—	—	—
Export	—	—	—	—	259	1,149,468	289	1,580,322
United States								
Import	864	5,182,628	1,083	7,640,406	—	—	—	—
Export	—	—	—	—	838	7,146,372	1,020	9,331,462

¹ Combined traffic of the Montreal — Lake Ontario section and the Welland Canal, with duplications eliminated.² Includes naval vessels.

15.24 St. Lawrence Seaway traffic¹ classified by type of cargo, 1970 and 1971

Commodity	1970 Cargo tons	% of total	1971 Cargo tons	% of total
AGRICULTURAL PRODUCTS	21,634,429	30.4	24,486,197	34.6
Wheat	8,962,084	12.6	10,186,795	14.4
Corn	3,052,532	4.3	3,529,647	5.0
Rye	54,904	0.1	257,903	0.4
Oats	581,505	0.8	414,738	0.6
Barley	4,248,797	6.0	4,255,007	6.0
Flour, wheat	93,912	0.1	179,623	0.3
Flour, edible, other	1,985	—	24,701	—
Soybeans	2,985,304	4.2	3,311,058	4.8
Soybean oil, cake and meal	258,715	0.4	560,875	0.4
Beans and peas	34,985	—	34,661	—
Malt	67,027	0.1	72,429	0.1
Flaxseed	407,554	0.6	497,307	0.7
Other agricultural products	885,125	1.2	1,161,453	1.6
ANIMAL PRODUCTS	370,283	0.5	428,542	0.6
Packing house products, edible	99,702	0.1	73,762	0.1
Hides, skins and pelts	76,450	0.1	70,097	0.1
Other animal products	194,131	0.3	284,683	0.4
MINERAL PRODUCTS	33,579,952	47.3	30,195,548	42.7
Bituminous coal	10,714,635	15.1	9,198,272	13.0
Coke	534,107	0.8	547,393	0.8
Iron ore	18,872,454	26.5	16,654,795	23.5
Aluminum ore and concentrates	146,674	0.2	128,311	0.2
Clay and bentonite	310,015	0.4	318,599	0.5
Gravel and sand	127,848	0.2	251,351	0.3
Stone, ground or crushed	981,546	1.4	951,312	1.3
Stone, rough	2,053	—	2,695	—
Petroleum, crude	56,054	0.1	42,907	0.1
Salt	1,083,634	1.5	1,187,856	1.7
Phosphate rock	—	—	73,437	0.1
Sulphur	—	—	—	—
Other mineral products	750,932	1.1	838,620	1.2
FOREST PRODUCTS	287,082	0.4	362,355	0.5
Pulpwood	147,185	0.2	176,923	0.2
Other forest products	139,897	0.2	185,432	0.3
MANUFACTURES AND MISCELLANEOUS	14,429,132	20.3	14,574,000	20.6
Gasoline	708,050	1.0	349,683	0.5
Fuel oil	3,811,127	5.4	3,060,099	4.4
Lubricating oils and greases	93,411	0.1	204,658	0.3
Petroleum products, other	74,686	0.1	30,987	—
Rubber, crude, natural and synthetic	138,233	0.2	211,653	0.3
Chemicals	376,186	0.5	488,190	0.7
Sodium products	156,888	0.2	148,306	0.2
Tar, pitch and creosote	128,615	0.2	119,747	0.2
Pig iron	311,264	0.4	127,041	0.2
Iron and steel, bars, rods, slabs	308,661	0.4	269,609	0.4
Iron and steel, nails, wire	138,371	0.2	153,167	0.3
Iron and steel, manufactured	3,996,112	5.6	5,883,829	8.3
Machinery and machines	80,122	0.1	103,362	0.2
Cement	231,250	0.3	204,308	0.2
Wood pulp	61,459	0.1	66,082	0.1
Newsprint	272,668	0.4	251,867	0.4
Syrup and molasses	110,237	0.2	108,113	0.1
Sugar	223,723	0.3	147,079	0.1
Food products	246,823	0.4	328,155	0.5
Scrap iron and steel	986,506	1.4	262,067	0.3
Other manufactures and miscellaneous	1,974,740	2.8	2,055,998	2.9
PACKAGE FREIGHT	812,794	1.1	736,560	1.0
Domestic	784,626	1.1	690,753	1.0
Foreign	28,168	—	45,807	—
Total	71,113,672	100.0	70,783,202	100.0

¹ Combined traffic of the Montreal — Lake Ontario section and the Welland Canal, with duplications eliminated.

15.25 St. Lawrence Seaway Authority expenditure, 1969-71 (dollars)

Item	1969	1970	1971
Administration			
Headquarters	2,235,904	2,551,695	2,499,047
Regional	1,402,586	1,501,618	1,959,070
Engineering	1,160,361	1,317,395	1,269,481
Construction Branch	815,388	795,519	653,523
Operation and maintenance			
Salaries and wages	6,924,685	7,767,649	8,940,602
Employee benefits	781,397	940,673	1,013,062
Maintenance materials and services	3,018,200	3,153,902	4,041,695
Grants in lieu of municipal taxes	684,466	719,044	800,973
Other operation and maintenance expenses	521,159	617,010	761,707
Total	17,544,146	19,364,505	21,939,160

15.26 Aircraft landing areas, classified by type of facility and operator, by province, as at Dec. 31, 1972

Type of facility and operator	Nfld.	PEI	NS	NB	Que.	Ont.	Man.	Sask.	Alta.	BC	YT	NWT	Total
Licensed airports													
Ministry of Transport	3	1	3	3	12	17	4	2	7	18	3	13	86
Municipal	—	—	3	4	26	27	6	17	23	24	—	2	132
Private	1	1	2	4	23	24	8	10	20	5	1	1	100
Heliports													
Ministry of Transport	—	1	1	1	—	—	—	—	—	—	—	—	3
Municipal	—	—	—	—	—	—	—	—	1	1	—	—	2
Private	—	—	—	—	5	16	1	—	2	14	2	2	42
Unlicensed airports													
Ministry of Transport	3	—	—	—	3	4	1	—	—	8	3	3	25
Municipal	2	—	2	—	7	1	1	27	80	16	5	19	160
Private	4	1	3	11	25	30	38	84	46	73	3	20	338
Abandoned or operator unknown	5	—	1	2	13	22	7	9	9	16	3	16	103
Licensed seaplane bases													
Ministry of Transport	1	—	—	—	—	—	—	—	—	9	1	2	13
Municipal	1	—	1	—	3	6	4	3	1	10	2	1	32
Private	4	—	1	1	36	65	21	10	3	17	—	17	175
Unlicensed seaplane bases													
Ministry of Transport	—	—	—	—	—	—	—	—	—	13	—	—	13
Municipal	1	—	—	—	—	4	6	1	1	3	1	1	18
Private	5	1	—	3	2	11	5	—	11	10	—	7	55
Abandoned or operator unknown	4	—	2	3	4	10	6	6	7	5	4	13	64
Military aerodromes													
DND (land)	2	1	2	2	3	6	2	1	5	1	2	17	44
DND (seaplane)	—	—	1	—	—	1	—	—	—	—	—	—	2
US Navy	1	—	—	—	—	—	—	—	—	—	—	—	1
US Air Force	1	—	—	—	—	—	—	—	—	—	—	17	18
RCMP (seaplane)	—	—	1	—	—	—	—	—	—	—	—	—	1
Total, all aerodromes	38	6	23	34	162	244	110	170	216	243	30	151	1,427
Land bases	18	4	15	25	114	141	66	149	188	175	20	76	991
Seaplane bases	16	1	4	7	45	96	42	20	23	67	8	41	370
Military aerodromes	4	1	4	2	3	7	2	1	5	1	2	34	66

15.27 Aircraft movements by class of operation at airports with Ministry of Transport air traffic control towers, 1967-71

Operation	1967	1968	1969	1970	1971
Local operations ¹	2,312,673	2,265,995	2,380,895	2,373,806	2,736,404
Itinerant operations ²	1,610,595	1,667,608	1,820,505	1,889,693	1,999,938
Simulated approaches ³	114,481	114,621	124,168	111,870	159,034
Total, movements	4,037,749	4,048,224	4,325,568	4,375,369	4,895,376
Number of towers	39	42	46	47	53

¹ Landing or take-off by aircraft that remain at all times within the tower control zone.
² Landing or take-off by aircraft that enter or leave the tower control zone.
³ Missed instrument or practice instrument approaches without landing. Since May 1971 counted as two movements instead of one.

15.28 Summary statistics of commercial air services, 1967-71¹

Item	1967	1968	1969	1970 ²	1971
Canadian carriers, revenue traffic only					
Unit toll transportation ²					
Departures	'000	344	401	411	428
Hours flown	"	448	487	504	506
Miles flown	"	123,838	139,393	148,275	157,962
Passengers carried	"	8,157	8,429	9,153	11,082
Passenger-miles	"	6,935,143	7,525,660	8,174,041	9,561,454
Cargo and excess baggage ton-miles	"	128,039	117,139	215,009	285,254
Mail ton-miles	"	28,725	30,716	35,350	48,701
Cargo and excess baggage	'000 tons	95	118	125	157
Mail carried	"	28	30	31	39
Bulk transportation ³					
Departures	'000	336	380	389	439
Hours flown	"	398	428	478	545
Miles flown	"	36,654	42,138	50,994	58,698
Passengers carried	"	791	876	1,111	1,402
Passenger-miles	"	392,104	643,969	1,309,725	1,941,115
Goods ton-miles	"	13,330	18,265	65,209	48,113
Freight carried	'000 tons	60	76	119	123
Other flying services ⁴					
Hours flown	'000	256	244	230	199

15.28 Summary statistics of commercial air services, 1967-71¹ (concluded)

Item		1967	1968	1969	1970 ²	1971
Canadian carriers, all services						
Revenue traffic						
Departures	'000	680	781		820	867
Hours flown	"	1,101	1,158	1,196	1,253	1,233
Miles flown	"	160,493	181,531	199,269	216,324	216,660
Passengers carried	"	8,948	9,305	10,264	11,758	12,484
Passenger-miles	"	7,327,247	8,169,629	9,483,766	11,551,156	11,502,569
Goods ton-miles	"	170,095	226,121	315,369	341,750	382,068
Goods carried	'000 tons	183	224	275	305	332
Non-revenue traffic						
Hours flown	'000	45	43	40	47	40
Passenger-miles	"	290,276	405,322	..	..	..
Goods ton-miles	"	8,746	9,488	..	..	..
Fuel consumed	'000 gal	348,328	397,609	443,414	510,244	519,801
Oil consumed	"	482	499	455	359	350
Average employees	'000	25	27	29	29	30
Salaries and wages paid	\$'000	186,902	214,643	245,434	282,752	304,209
Operating revenues	"	543,610	716,377	702,659	815,796	884,877
Operating expenses	"	516,076	576,529	665,578	783,554	828,533
Canadian and foreign carriers, all services						
Hours flown	'000	1,129	1,188	1,229	1,299	1,265
Miles flown	"	171,195	192,891	211,883	229,008	228,458
Passengers carried	"	11,596	11,875	13,219	14,768	15,723
Goods carried	'000 tons	218	269	337	367	399

¹ Although most figures in this table have been taken from the audited reports of commercial air carriers, some preliminary figures have been used.

² Transportation of passengers or goods at a toll per unit.

³ Transportation of passengers or goods at a toll per mile or per hour for the entire aircraft.

⁴ Comprises flying training, aerial photography, and aerial patrol and inspection.

15.29 Comparative statistics of domestic and international traffic, 1971^P

Item		Canadian airlines		Foreign airlines		Total
		Domestic services	International services	United States	Other foreign	
Unit toll transportation ¹ , revenue traffic only						
Departures	'000	371	57	..	..	..
Hours flown	"	364	142	9	22	537
Miles flown	"	100,891	57,071	3,016	8,147	169,125
Passengers carried	"	8,209	2,873	2,389	710	14,181
Passenger-miles	"	5,175,693	4,385,761	133,727	490,080	10,185,261
Goods ton-miles	"	160,849	173,107	1,202	22,400	357,558
Goods carried	'000 lb.	274,316	144,554	55,623	75,035	549,528
Bulk transportation ² , revenue traffic only						
Departures	'000	427	12	..	..	..
Hours flown	"	506	39	-	1 ³	546
Miles flown	"	42,531	16,167	48 ³	587 ³	59,333
Passengers carried	"	814	588	23	117	1,542
Passenger-miles	"	128,235	1,812,880	2,136	27,571	1,970,822
Goods ton-miles	"	38,382	9,731	5	495	48,613
Freight carried	'000 lb.	241,212	5,715	43	1,180	248,150

¹ Transportation of passengers or goods at a toll per unit.

² Transportation of passengers or goods at a toll per mile or per hour for the entire aircraft.

³ Hours and miles flown are those flown only over Canada.

Sources

15.1 Canadian Transport Commission.

15.2 - 15.21 Transportation and Communications Division, Industry Statistics Branch, Statistics Canada.

15.22 National Harbours Board.

15.23 - 15.25 The St. Lawrence Seaway Authority.

15.26 Public Affairs, Ministry of Transport.

15.27 - 15.29 Transportation and Communications Division, Industry Statistics Branch, Statistics Canada.

Chapter 16

Communications

16.1 Telecommunications

The size, topography and climate of Canada have significantly influenced the development of telecommunications in this country. Vast networks of telephone, telegraph, radio and television facilities are necessary to provide efficient communications between individual Canadians and the rest of the world. As a result Canada possesses a somewhat unique structure whereby telephone and telegraph companies and a domestic satellite facility co-operate closely to carry messages to all parts of the country by microwave, tropospheric scatterwave systems, satellite, land lines and high frequency radio bands.

The Canadian Telecommunications Carriers Association (CTCA), established in February 1972, provides the framework for co-operation on an industry-wide basis for the major telecommunications carriers in Canada. The Association consists of 23 telecommunications carriers organizations, each represented on the board of directors by a senior officer. It brings together in one organization the Trans-Canada Telephone System and its eight members, The Canadian Independent Telephone Association, nine other telephone companies, and Canadian National and Canadian Pacific Telecommunications, Canadian Overseas Telecommunication Corporation, and Telesat Canada. CTCA has its headquarters in Ottawa.

The vital importance of telecommunications in Canada was recognized in the creation of the federal Department of Communications in 1969. The new Department concerned itself with a comprehensive inquiry into all aspects of Canada's information system. This "Telecommission" study, completed in the spring of 1971, provided the guidance for the formulation of national communications policies and programs. Supplementing this study is a report recently completed by the Canadian Computer/Communications Task Force charged with making recommendations to the government to assist in formulating legislation concerning the Canadian computer/communications industry. The report has now been submitted. The combination of computer technology and the technology of telecommunications was the latest stage in permitting a national linking of computers. Since then, the concept of multi-user sharing of a central data processing complex has rapidly gained acceptance. The Department has also sponsored projects to help high schools and universities use the latest communications and computer systems for exploring computer-assisted learning. One such project is CANUNET, a study being conducted by Canadian universities to see if it is possible to design a computer/communications network to serve the collective needs of universities.

16.1.1 Telecommunications media

16.1.1.1 Voice communications

Telephone service. Canadians are among the most avid telephone talkers in the world. Almost 11 million telephones are in service, or one for nearly every two Canadians, about ten million of them serviced by the eight member companies of the Trans-Canada Telephone System. Constituent members of the system are: Newfoundland Telephone Company Limited; Maritime Telegraph & Telephone Company Ltd.; The New Brunswick Telephone Company Limited; Bell Canada; Manitoba Telephone System; Saskatchewan Telecommunications; Alberta Government Telephones; and British Columbia Telephone Company.

Another three quarters of a million telephones are provided by Edmonton Telephones; Island Telephone Co. Ltd.; Northern Telephone Ltd.; Okanagan Telephone Co.; Ontario Northland Communications; Québec Téléphone; Télébec Ltée; Téléphone du Nord de Québec Inc.; Thunder Bay Telephone Department; and Canadian National Telecommunications. In addition, some 1,200 smaller telephone companies provide telephone services.

Canadian National Telecommunications, geographically the largest single system in Canada, provides telephone service for residents in the Yukon Territory and Northwest Territories, parts of Newfoundland and in northern sections of British Columbia; in all, it has some 44,000 subscribers.

Each member company of the Trans-Canada Telephone System (TCTS) fulfils a dual role: first, to provide good quality service within its own territory and second, to integrate its

facilities with those of the other members and with those of all the other telephone companies in Canada to provide connections with telephones elsewhere in North America and overseas. Collectively, the system operates the world's longest single microwave network, carrying telephone conversations, radio and television programs, and data coast-to-coast.

About 85% of the telephones in Canada have access to direct dial long distance equipment that automatically routes calls and bills the customer. Continuing automation of facilities made possible a reduction in rates on customer-dialled calls of over 400 miles within the network. At the same time, TCTS replaced the three-minute minimum calling charge with a one-minute minimum for direct dial calls.

TCTS companies have invested \$7,500 million in their facilities and during 1973 expect to spend an additional \$1,000 million. Gross revenues for 1972 were about \$1,700 million.

In 1972, TCTS members continued their program of installing electronic switching systems in several Canadian centres. With computers controlling their operation, electronic switching systems can be expanded by enlarging the computer programs. The computer also makes it possible for one telephone to do the work of many more complex pieces of equipment.

Other services have been developed to meet specialized needs for voice-only communications. These range from aids to the handicapped to services such as wide area telephone service and Voicecom for business firms.

Hot-line service. A service introduced in 1969 by CN-CP Telecommunications and Western Union is the hot-line service whereby companies in Toronto or Montreal may talk to their offices in New York City by simply picking up the handset of the telephone. When a customer picks up his handset, the exchange equipment will select the corresponding telephone at the other end. Subscribers are charged on a time-used basis.

Wide area telephone service (WATS). provided by TCTS companies, is designed for customers who make or receive many long distance calls to or from many points. WATS allows a customer to call, or to receive calls from, anywhere within one of seven zones for a flat monthly rate. These areas range in size from part of a province to all of Canada.

Voicecom service. Single-digit dialling is the main feature of this service offered by TCTS. Voicecom provides voice-only communication between specified locations via the public telephone network on a pay-as-you-use basis. By dialling a single telephone number, a Voicecom customer can reach as many as ten telephones subscribing to the same service.

16.1.1.2 Record communications

Public telegraph service. Canada's telegraph systems are operated by CN-CP Telecommunications. This company, a fusion of the telecommunications branches of the Canadian National and Canadian Pacific railways, operates telegraph offices in all ten provinces and in the Yukon Territory and Northwest Territories. Messages can be forwarded or received from any point in Canada or throughout the world via the overseas cable services. Messages are transmitted by cathode ray tube (CRT) teleprinter and facsimile equipment and telegraph networks over which the flow of public messages is controlled by computers. Messages are taken in and forwarded automatically in accordance with special programs stored in the computer's memory. The computer determines where the message is to be sent and sends it as soon as the circuits are free.

The most recent innovation is the use of cathode ray tube displays at all the larger message centres. Basically, CRT displays have television-like screens placed above a keyboard similar to a typewriter which is connected to the message-switching computer. As the operator receives a telephoned telegram message, she types it on the keyboard to read the message back to the caller and, with editing capabilities built into the displays, may make changes to the text if required. When the message is confirmed, the push of a button sends it into the message-switching computer for transmission to its destination.

Telex, the largest teletypewriter service in Canada, is also provided by CN-CP Telecommunications. Its network of 25,000 subscribers in Canada interconnects with the Western Union and RCA Alaska Communications Telex networks in the United States and with European and world-wide networks of more than 420,000 subscribers in 177 countries. Telex is a direct distance dial teleprinter system which permits a subscriber to directly dial any

other subscriber on the network. A multiple address service was offered to Telex users in 1971 through CNT's message-switching computer complex located in Toronto.

A medium-speed Telex service is offered exclusively by CN-CP Telecommunications, operating in the speed range of 100 to 250 words per minute. The subscriber may connect his own computer or data sending-receiving equipment or lease terminal equipment from CN-CP. This service provides a direct dial interconnection with subscribers anywhere in Canada to achieve a medium-speed range transfer of data from one location to another. The toll rates to subscribers are the same as for the standard-speed Telex service, that is, based on time used and distance. A variety of speeds and codes can be handled, making this service useful for data transmission.

Telepost. CN-CP and the Canada Post Office introduced a new communications service called Telepost on October 1, 1972 which fills a gap between telegrams and first class mail. It is available to CN-CP Telex and Telenet subscribers, and enables them to send messages electronically by Telex to a post office centre for delivery to the addressee.

Telex terminals have been installed in post offices across the country, where messages are placed in specially designed tri-colour envelopes and delivered through the normal mail stream. Next-day delivery is provided to virtually any postal address in Canada. There is no restriction on the length of the message. The charge is 75 cents for the service, in addition to regular Telex charges. A special delivery Telepost can be sent for an additional 40 cents.

Teletypewriter exchange service (TWX) is provided in Canada by TCTS companies. The service provides for switched, dial-up communication on a two-point and conference basis between teletypewriters at a speed of 100 words per minute or ten characters per second. TWX basic service is a standard teletypewriter for use with relatively simple message transaction application. TWX premium service has all the basic features and in addition is designed for more complex order-writing systems requiring a heavy-usage terminal capable of handling forms, form tabulation and multi-copies. There are 4,100 TWX subscribers in Canada and 35,000 in the United States. TWX subscribers can connect with overseas teletypewriter customers through International Telex.

Private wire teletype systems. Although private wire services are still a significant part of business for the telecommunications industry, the prime communications users are supplanting their private wire systems with computer-controlled store-and-forward systems.

16.1.1.3 Data communications

Quick availability of information of all kinds is vital to the management of modern industry. The member companies of the Trans-Canada Telephone System offer a wide selection of low-speed data services and a variety of medium- and high-speed computer communications facilities. In recent years, the TCTS has increased the message capacity of its coast-to-coast microwave network to meet the growing needs of data communications users, set up computer-controlled communications systems, and started work on a coast-to-coast digital data network.

Digital communications. This form of medium- and high-speed transmission is important to computer communications users because it permits the transmission of data in digital form, the language of computers. Without digital transmission facilities, data moving from one computer to another must be converted to analogue form before transmission, and reconverted to digital form before reception by the recipient computer. Another benefit of digital transmission is its low error rate.

In 1971 TCTS began development of a coast-to-coast digital data network with a trial network linking Ottawa, Toronto and Calgary which worked successfully with four trial customers through most of 1972. Work also continued on development of a high-capacity, buried coaxial cable that will carry digital and voice traffic along the heavy-usage corridor from Quebec City to southwestern Ontario.

In 1972 TCTS formed the Computer Communications Group, a pooling of the expertise of all eight member companies, permitting computer communications users to call on the resources of the entire system to meet their needs.

Data-phone service transmits data from punched cards, tape or magnetic tape over public telephone circuits or leased private lines. Data-phones take signals in digital form and convert them to analogue signals (variable tones) for transmission. At the receiving end, another

data-phone converts the analogue signals back to digital so that they are acceptable to a computer. Data-phone transmits at speeds up to 1,200 bits per second.

Data-line service uses the public telephone circuits wherever direct distance dialling is available. Data-line users can dial-up a time-sharing computer or other business machine and send or receive information at speeds up to 2,000 bits per second.

Datacom permits the transmission of data over the regular public telephone network, and consists of an access line to the network, a telephone set and a Datacom terminal which is a teletypewriter. The Datacom terminal can be used for normal teletypewriter functions and also as an input-output device associated with a time-sharing computer.

VUcom I, introduced in 1972, is a terminal which displays data on a television-like screen. When it is connected to a telecommunications network, VUcom I can be used for retrieving information from central computer banks, for checking credit ratings, etc. It can also be used as an in-house terminal for posting business orders and for process control in manufacturing. The terminal is equipped with a teletypewriter-style keyboard which the operator uses to prepare and send data.

Dataspeed service is for the movement of large volumes of data at high speeds over the public telephone network or private lines. Transmitting at 1,050 words per minute, Dataspeed takes only half an hour to move the same amount of information that would keep a teletypewriter, operating at 100 words per minute, occupied for 4½ hours. Information to be transmitted is recorded on punched paper tape which then speeds through a machine that can "read" the code represented by the arrangement of the punched holes. As the tape is read, signals are sent to the machine on the receiving end of the circuit.

Multicom is a wideband data service that allows the customer to pay only for transmission time used. It was introduced on a nation-wide basis in 1970. There are three classes of Multicom service and a subscriber can dial-up any other subscriber in Canada on the same class of service. With features designed specifically for data transmission, as opposed to voice transmission, Multicom provides reliability and low error rates.

Multicom I provides data and voice transmission between specified locations at speeds up to the capability of the public telephone network (2,000 bits per second). Users can connect with each other over the direct distance dial network.

Multicom II provides medium-speed data transmission up to 4,800 bits per second. It is functionally segregated from the direct distance dial network, but is integrated to the extent of using the same switching stations, microwave towers and other facilities. Provided the customer's business machines have the capability, data can be transmitted both ways simultaneously on Multicom II.

Multicom III provides transmission at speeds of 19.2, 40.8 and 50.0 kilobits per second over a network integrated with the regular telephone network but is, like Multicom II, functionally separate. Multicom III permits simultaneous voice and data transmission.

TCTS also provides wideband data channels that offer a special high-speed service to customers who need such transmission facilities on a full-time or dedicated basis. Unlike Multicom, wideband data channels are paid for on a 24-hour basis and operate outside the public telephone network.

Broadband exchange service. In 1967, CN-CP Telecommunications introduced an automatic voice-data switching system known as broadband exchange service, a high-quality, rapid communications system. It is the first such system to operate in Canada and the second in the world. Broadband has more than tripled the transmission speeds for switched data services; furthermore, it has the capability, on customer demand, of transmitting computer data at 51,000 words per minute, or more than 50 times faster than the top speed reached by conventional switched networks. The Royal Canadian Mounted Police was the first organization to be tied into this modern network, using it for high-quality transmission of fingerprints, photographs and documents between headquarters at Ottawa and divisional headquarters at Montreal, Toronto, Winnipeg, Edmonton, Regina, Vancouver, Fredericton, Halifax and St. John's.

The name broadband exchange service is derived from the actual system since it is designed to permit various bandwidths, depending on the communications needs of subscribers. The system can switch four bandwidths; four and eight kilohertz for voice,

facsimile and data (from 1,000 to 3,000 words per minute); 16 kHz for high fidelity radio program transmission and facsimile; and 48 kHz for high-speed computer-to-computer data exchange (51,000 words per minute) and high speed for facsimile. The four-kilohertz bandwidth is now operational and the other bandwidths will become available upon customer demand. Transmission is carried by the CN-CP microwave system using frequency diversity techniques to provide a high degree of reliability. In other words, the transmission is carried over different circuits at the same time, one being the back-up system for the other.

Each subscriber has in his office a voice-data subset which can be changed from voice to data communication. The subset features push-button "dialling" and the customer, to reach a distant point, simply keys a series of seven digits. The first three digits designate the distant exchange, the fourth digit indicates the desired bandwidth and the last three digits select the line of the desired party. A re-ring button is included so that the customer may signal the distant party to revert to voice communication during or after sending data. A feature of broadband is abbreviated keying, where customers may contact frequently called stations by pushing a two-digit code instead of the normal seven digits. Broadband will establish connections, including keying time, within five seconds, or two seconds on the special "hot-line" service. Actual connection time after keying or "dialling" is less than two seconds. Another feature of broadband is conference calling, where a subscriber, by pushing a two-digit code, will automatically contact a predetermined list of parties needed for the conference. Subscribers are charged on a "pay-as-you-use" basis.

Computer-controlled transmission systems. CN-CP Telecommunications and the Trans-Canada Telephone System operate store-and-forward message-switching computers which control the flow of message traffic. CN has operated in this field since 1964.

CN's system provides a switching medium for Air Canada, CP Air, regional air lines such as PWA, Transair, Quebecair, EPA, and CN administrative message traffic, and also controls and transmits information on CN's reservation system. To make a reservation, a computer card is marked and inserted into a card reader and a reply returns via a teleprinter confirming the reservation. A third-generation computer installed for CN in 1968 is performing major store-and-forward message switching functions for the Atmospheric Environment Service: when the computer finds a weather report from any of the 500 weather stations throughout Canada, it will tell the station equipment to transmit the report into the computer, which then determines where and at what time of the day the information is to be sent.

Commercial telegrams, entered on local CRT sets at most major offices, are forwarded by mini-computers to CN's third-generation message-switching computer complex for switching across the country.

A new time-shared, computer-directed data-and-message system called Telenet was introduced by CN-CP Telecommunications in 1971. The Telenet system controls a number of subscriber networks by central computers. The message-switching computer centres handle many customers but each customer's network is completely private. In its initial phase, Telenet will be confined to message-switching and related features such as speed and code conversions, message storage and retrieval, high-speed data handling, interface with customer-owned computers and message refile. A single message may be transmitted for delivery to as many as 32 stations by one group-routing indicator at one time. The computers recognize two levels of priority; messages marked "quick" are handled first. Message-switching computers are located at CN offices in Toronto and CP offices in Montreal and all Canadian subscribers' requirements are routed by one of these centres. Future plans call for switching-computer centres at Vancouver, Edmonton, Winnipeg and Halifax. Various options and capabilities of Telenet will enable CN-CP to custom-design a system to meet specific needs of individual subscribers.

Message-switching data service. TCTS companies provide a message-switching data service (MSDS) which controls teletypewriter transmissions by computer. Message traffic between TWX terminals and private line terminals supplied by the TCTS companies can be so controlled. Some businesses have both TWX and private line teletypewriter networks. TWX operates on a switched network of 100 words per minute and private line teletypewriters can operate at 60, 75 or 100 words per minute. In addition, the TWX and private line teletypewriters may use different codes. Normally, teletypewriters using different speeds and codes cannot communicate, but the MSDS computer makes this possible. The computer can

also store messages destined for a teletypewriter that is busy at the time the message is sent. Later on the computer will check the recipient machine and will automatically forward the message when it is free. Developed in 1967, MSDS has relieved many large Canadian firms of the chore of manually sorting and forwarding inter-company teletypewriter messages.

Store-and-forward message switching dates back to the early 1940s when TCTS provided electro-mechanical devices which were installed on each customer's premises. The computer in today's switching system is located on telephone company premises, resulting in better maintenance. The computer not only operates faster than electro-mechanical switching, but also provides customers with additional features.

Software controlled communications service features a mini-computer that acts as a bridge between the communications networks and a customer's computer, allowing the latter to reach a wide variety of remote terminals using different speeds and codes. It can be re-programmed to cope with changing conditions, a function which previously could be performed only by physical modification of control units. The mini-computer can also direct traffic and diagnose trouble on the communications circuits.

16.1.1.4 Public and private commercial microwave facilities

Railways. CN-CP Telecommunications operates a microwave system extending from Moncton, NB to Nanaimo, BC, which is used for television, telephone and data-relay purposes. During 1972, a connection was provided to Campbellton, NB, and the capability of handling telephone and data traffic was added along the Toronto - Hamilton - St. Catharines - Kitchener - London - Windsor route, previously used only for television purposes. Extensions to the microwave system are under construction on the Moncton - Halifax - Sydney and Kamloops - Kelowna - Penticton - Trail - Nelson routes.

On its own, CN has microwave facilities linking Newfoundland to the Maritime Provinces at Sydney, NS, and across the Strait of Belle Isle to Labrador and to Quebec at Blanc Sablon. In addition, CN has installed a microwave system from Grande Prairie, Alta., through the Yukon Territory to Alaska to carry telephone and data traffic; it serves both civil and military organizations. In co-operation with Alberta Government Telephones, a combination microwave and tropospheric scatterwave system has been established to connect Alberta to Yellowknife, Fort Simpson and Lady Franklin Point in the Northwest Territories. A combination microwave-scatterwave system links the Yukon Territory with the Mackenzie Delta area of the Northwest Territories. Microwave is used from Whitehorse to Keno and a tropospheric scatterwave system bridges the Richardson Mountains from Keno to Arctic Red River; from there, microwave is used north to Tuktoyaktuk. A scatterwave system hurls transmission up to the troposphere where it is bounced back to the next station some 200 miles away. A microwave system is being built by CN between Fort Simpson and Norman Wells.

The Quebec North Shore and Labrador Railway has developed a microwave system extending into northern Quebec to provide communication for mining operations and to serve some civil communication purposes. Ontario Northland Railway operates a microwave system connecting northern Ontario and James Bay for military and civil communication. The British Columbia Railway makes extensive use of 6,000 Mc/s microwave facilities linking Vancouver with Prince George, Dawson Creek and Fort Nelson, and the company is now constructing a branch of this system linking Fort St. James to Dease Lake.

Satellite communications facilities. Telesat Canada launched the world's first geostationary communications satellite designed for domestic commercial use, ANIK I, on November 9, 1972. By December 1, ANIK I was operationally functional in its internationally designated orbital position over the equator at 114° W. The satellite maintains a stationary orbit at an altitude of 22,300 miles, rotating with the earth every 24 hours and therefore constantly maintaining the same relative position over the equator.

Initial commercial service to Telesat's customers commenced during January 1973 through a network of some 37 earth stations located across the length and breadth of Canada. Basically, satellite communication is one long microwave link. The clarity and strength of transmission provided by satellites is comparable to that of existing microwave systems but with the added advantage of providing virtually all forms of telecommunications to areas which had not previously been well serviced.

ANIK I and its in-space back-up satellite, ANIK II, will provide television distribution in both English and French to many parts of Canada not now served by terrestrial facilities.

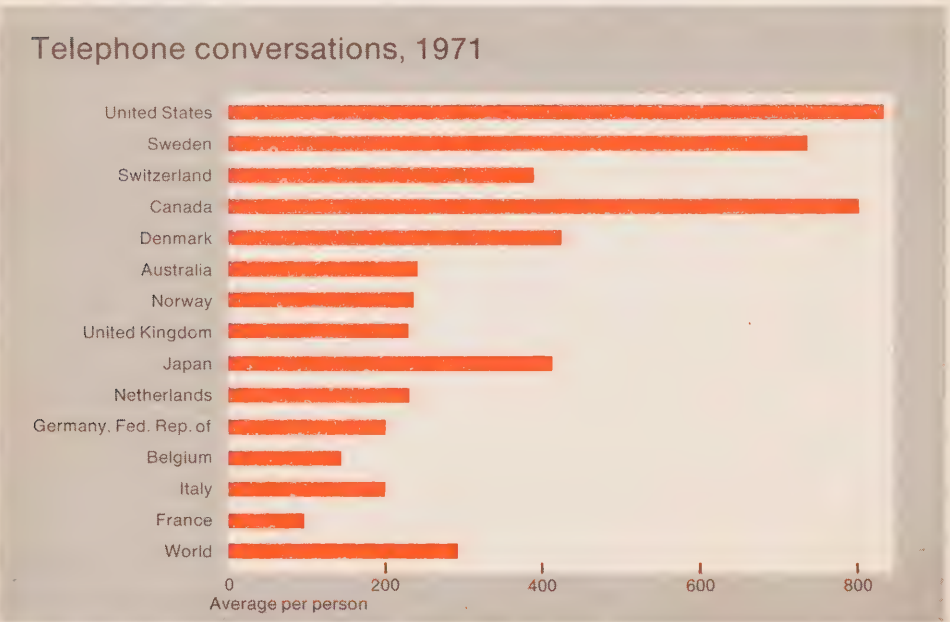
improve telephone communications in northern Canada and supplement existing microwave systems servicing southern Canada. The ANIK generation of satellites has a projected minimum life cycle of seven years. Telesat Canada has signed contracts with the Canadian Broadcasting Corporation for three radio frequency (RF) channels for English- and French-language television distribution; with a consortium of telecommunications common carriers, including the members of the Trans-Canada Telephone System and CN-CP Telecommunications, for two RF channels to provide voice and data communications between Toronto and Vancouver; and with Bell Canada for two RF channels to provide improved telephone communications in northern Canada. During 1973, it is expected that a contract will be signed between Telesat Canada and the Canadian Overseas Telecommunication Corporation for service starting in early 1974, linking the Canadian end of a new transatlantic cable, CANTAT II, via satellite to central Canada. In addition, the company is negotiating with a number of US telecommunications carriers for the leasing of RF channels on ANIK II to provide US service via satellite in the intervening period until US systems are established in space. By the end of 1972, Telesat Canada was already expanding its initial earth station network to provide for an additional 15 locations for improved telephone communications in the northern parts of Canada during 1973 and 1974.

Because of its early entry into the field of commercial satellite communications, Telesat Canada has acquired a marketable body of managerial and technical expertise in this rapidly evolving field.

16.1.2 Telephone and telegraph statistics

Telephone statistics. In 1971 there were 1,490 telephone systems operating in Canada compared with 1,716 in 1970; of these systems, 1,171 reported in 1971 and 1,376 in 1970 (Table 16.1). Co-operative systems in rural districts decreased in number from 1,256 to 1,074 in the same comparison and incorporated companies from 84 to 67. The largest of the incorporated companies, Bell Canada, which operates throughout the greater part of Ontario and Quebec and in Newfoundland and the Northwest Territories, served 61% of all the telephones in Canada and the British Columbia Telephone Company, also shareholder-owned, served 10% of the total in 1971. The number of telephones in use continues to increase at the rate of about 5% annually.

Table 16.2 shows the distribution of telephones in use in 1971. Of the total, 71% were residential telephones, and of these, 62% were on private lines, and extension telephones and



those on party lines accounted for nearly 19% each. Of the business telephones, nearly 37% were on private branch exchanges, 28% were on private lines and nearly 24% were extensions. Less than 1% of the total were coin-operated. Ontario had the largest number of telephones at 52 per 100 population, followed closely by British Columbia and Alberta.

The major telephone systems record completed calls on representative days throughout the year and on this basis estimate the number of local conversations which, added to the actual count of long distance calls, gives their total volume of business. Estimates are included for the smaller systems. Table 16.3 shows that Canadians made an average of 779 calls per person in 1971. Telephone users in the US exceeded this figure at 830 calls per person, and Swedish callers were third at 687 calls.

The steady increases in capitalization, revenue and expenditure of telephone companies together with the number of employees and salaries and wages paid are shown for the years 1967-71 in Table 16.4. Provincial figures for 1971 are given in Table 16.5.

Telegraph statistics. Nine telegraph and cable companies operated in Canada during 1971 but, as already stated, telegraph service is provided mainly by the telecommunications departments of the two major railway companies. The number of telegrams sent continues to decline year by year, giving way to other types of message transmission, but the number of cablegrams has been rising. The business of telegraph and cable companies appears to be changing from one of handling messages directly to one of leasing equipment for the transmission of messages by others. Revenues from the latter source have been rising over the past several years and have been the main factor in the steady advance in total operating revenues (Table 16.6). Total cost of property and equipment for all telegraph and cable companies was \$606.7 million in 1971, increasing from \$570.6 million in 1970.

16.1.3 Federal regulations and services

The Department of Communications was established on April 1, 1969. The duties, powers and functions of the Minister of Communications extend to and include all matters relating to telecommunications over which the Parliament of Canada has jurisdiction, not by law assigned to any other department, branch or agency of the Government of Canada; and the development and utilization generally of communication undertakings, facilities, systems and services for Canada. He is responsible for the administration of the Telegraph Act (RSC 1970, c.T-3), the Radio Act (RSC 1970, c.R-1) and the Canadian Overseas Telecommunication Corporation Act.

The Department is made up of the Communications Research Centre formed from the Department of Defence Research Telecommunications Establishment; the Telecommunications Management Bureau transferred from the Ministry of Transport; and the Policy, Plans and Programs Branch. The work of the Research Centre ranges from fundamental studies on materials and circuits to the design of advanced high-reliability avionics and aerospace electronic systems. The Telecommunications Management Bureau is responsible for: development of policy and plans with respect to national and international telecommunications by satellites, cables and other media including relations with the Canadian Overseas Telecommunication Corporation and participation in the work of the International Telecommunications Union and its subsidiary organs; establishment and review of the telecommunications requirements of the federal government departments and agencies throughout Canada, and co-ordination of the planning and provision of facilities to meet these needs; planning of emergency measures and administration of the Emergency National Telecommunication Organization (ENTO); development and maintenance within the Bureau of a centre of competence in the latest telecommunications technology; and administration of the Radio Act and Regulations including allocation and assignment of radio frequencies, radio provisions of the Canada Shipping Act, Ship Station Radio Regulations, the Telegraphs Act and the Regulations thereunder covering the licensing of transoceanic cables. The Policy, Plans and Programs Branch is responsible for the development of long-range plans and policies and the co-ordination of investigations and research programs that will improve knowledge about the Canadian communications environment.

Canadian Transport Commission. Telephone and telegraph companies incorporated under federal legislation are subject to the jurisdiction of the CTC in the matter of rates and practices under the provisions of the Railway Act. Previously the CTC regulated rates only in those cases

in which a charge was made to the general public; recent amendments to the Railway Act extend the jurisdiction of this body to cover rates charged for private wire services as well. International telegraph and telephone communications are handled subject to the International Telecommunication Convention and its Regulations, or under regional agreements, or both. Overseas cables landed in Canada are subject to the External Submarine Cables Regulations under the Telegraphs Act.

Radiocommunications in Canada, except for those matters covered by the Broadcasting Act, are regulated under the Radio Act and Regulations which, in addition to providing for the licensing of radio stations performing terrestrial radio services, also provide for licensing earth and space stations engaged in space radiocommunication services, and the Canada Shipping Act and Ship Station Radio Regulations. Radiocommunications in Canada are administered in accordance with the International Telecommunication Convention and Radio Regulations annexed thereto; the International Civil Aviation Convention; and the International Convention for the Safety of Life at Sea. A number of Canada - United States conventions and agreements are also in effect, such as: the Convention for the Promotion of Safety on the Great Lakes by means of Radio; the Convention relating to the operation by citizens of either country of certain radio equipment or stations in the other country; the Agreement relating to the Co-ordination and Use of Radio Frequency above Thirty Megacycles per Second; the Television and FM Agreements; and the Agreement relating to the operation in either country of radiotelephone stations licensed in the Citizens Radio Service of the United States and the General Radio Service of Canada. In addition, Canada is a party to the North American Regional Broadcasting Agreement.

The Canadian Radio-Television Commission issues licences for broadcasting undertakings under the Broadcasting Act of 1968. However, the licences are not issued unless the Minister of Communications certifies to the Commission that the applicant has satisfied the requirements of the Radio Act and Regulations thereunder, and has been or will be issued a Technical Construction and Operating Certificate under that Act. Broadcasting undertakings include radio (AM and FM) and television broadcasting stations, community antenna television (CATV) systems, and network operations. The technical rules and procedures for the allocation of frequency channels and installation and technical operation of broadcasting station facilities are set forth in the Department's *Broadcasting procedures and radio standards specifications*. These documents form the basis for determining the acceptability of applications for Technical Construction and Operating Certificates and for the control of the technical operation of broadcasting undertakings. The availability of the technical facilities for broadcasting is subject to the terms of the North American Regional Broadcasting Agreement, the Canada - US Television Agreement and the Canada - US FM Agreements.

Telesat Canada, a corporation created by an Act of Parliament, June 27, 1969, is responsible for Canada's domestic communications satellite. It has a unique form of financing — the government, designated common carriers, and the general public will each be offered about one third of its shares. The corporation's annual report is tabled in the House of Commons by the Minister of Communications.

Licensing and regulation of radio and TV stations. Licensing is the federal government's method of maintaining control over radiocommunications in Canada. Under the Radio Act, radio stations (other than those used in broadcasting undertakings) employing any form of Hertzian wave transmission, including television and radar, must be licensed by the Department of Communications, unless exempted by regulation. The following General Radio Regulations basically provide for six classes of radio station licence: Coast, Land, Mobile, Ship, Earth and Space. Various categories of service may be authorized under each of these classes, e.g., public commercial service, private commercial service, amateur, experimental, etc. The number of licences in force for radio stations in Canada in the year ended March 31, 1972 was 268,810 compared with 256,327 for the previous year. These figures include stations operated by federal, provincial and municipal government departments and agencies, stations on ships and aircraft registered in Canada and stations in land vehicles operated for both public and private purposes, but they do not include stations in the broadcasting service. Licensing activities during the year ended March 31, 1972 with comparative figures for the previous year shown in parentheses, include: applications 31,608 (29,125), authorizations 27,085 (23,537), licence amendments 26,139 (22,272), cancellations

18,711 (18,198), total licences in force 268,810 (256,327), and net increase in licences 12,483 (10,538).

Radio standards in general are drawn up in consultation with the electronic industry and users of radio, taking into account such technical factors as those which affect frequency spectrum utilization, reliability of apparatus, and compatibility under conditions of service. The Department of Communications maintains an engineering laboratory to develop standard specifications and for testing apparatus to ensure compliance with the standards.

Licensing involves the assigning of specific frequencies to each station. Bands of frequencies are allocated for various types of services, often on a shared non-interference basis. Frequency selection, compatibility evaluation, domestic registration (computerized data base with a file size of more than 53.5 million characters), and notification with the International Frequency Registration Board (IFRB) of the International Telecommunications Union at Geneva are carried out to ensure efficient use of the spectrum. Assignments are made in keeping with international and domestic statutes and regulations, regional agreements and domestic policies. The IFRB is notified of frequency assignments for technical examination and for inclusion, with appropriate "in service" dates, in the Master International Frequency Register so that Canadian assignments will receive international recognition and be given protection from interference by foreign stations. In service dates are necessary when determining prior right to the use of particular frequencies.

The enforcement activities of the Telecommunications Regulation Branch, Department of Communications, include the technical inspection of all radio stations including the monitoring and measurement of their radiated signals to ensure compliance with the regulations and conditions of licensing; the location and suppression of radio interference; the technical examination of candidates for the various classes of certificates of proficiency in radio which must be held by the operators of radio stations; and the direction of prosecutions in the courts. These functions are carried out through personnel located at 39 radio regulations inspection offices, 11 fixed monitoring stations, eight mobile monitoring vehicles, and six regional spectrum observation centres across Canada.

Radio aids to marine and aeronautical navigation. Federal services in aid of marine and aeronautical navigation are provided by the Ministry of Transport. Six regional offices, located at Vancouver, Edmonton, Winnipeg, Toronto, Montreal and Moncton, are responsible for the construction and operation of the facilities.

Radio aids to marine navigation are provided for radio-equipped Canadian vessels and foreign ships using Canadian waters. This safety and communications service for shipping covers the east and west coasts, the Great Lakes, the St. Lawrence River and Gulf, Hudson Bay and Hudson Strait and includes regularly broadcast weather reports, storm warnings and notices of danger to navigation. Ships at sea may obtain medical advice from any coast station. The stations carry out communications by radiotelegraph and/or radiotelephone and most of them provide connections to land telephone lines. Halifax (VCS) and Vancouver (VAI) stations provide long-range radiotelegraph and radiotelephone services to ships. Coast stations on Hudson Bay and Hudson Strait provide, in addition to their regular services, commercial communications for posts of the Hudson's Bay Company and various prospecting and development organizations, make weather observations, handle administrative traffic and assist aircraft with information, landing conditions, etc.

Automatic radiobeacon stations are maintained on the east and west coasts, the St. Lawrence River and Gulf, the Great Lakes and Hudson Bay and Hudson Strait, giving navigational aid to mariners by transmitting signals on which bearings may be taken. There are five types of radiobeacons in operation: sequenced, continuously operating (marine and dual-purpose marine/air), marker, ship-calibrating and periodically operating. Sequenced radiobeacons are arranged, where possible, in groups up to a maximum of six stations transmitting in sequence on a common frequency, the sequence being repeated continually regardless of weather conditions. Continuously operating marine radiobeacons transmit a continuous carrier modulated by a tone which is keyed at fixed intervals to provide the identifying Morse characteristic. Continuously operating dual-purpose marine/air radiobeacons are provided for the use of both ships and aircraft. They transmit a continuous carrier modulated by a tone which is interrupted eight times per minute for the transmission of a one- or two-letter identifier. Marker radiobeacons, with a range of ten nautical miles, do not have a characteristic Morse identifier, but can be identified only by the operating frequency. They

operate continuously, transmitting $\frac{1}{2}$ -second dashes for $13\frac{1}{2}$ seconds then remaining silent for $1\frac{1}{2}$ seconds. Ship-calibrating radiobeacons are available at certain locations to enable ships fitted with direction finders to calibrate their equipment. These radiobeacons operate for a six-hour period on the advertised frequency. Periodically operating radiobeacons are located in areas where there is a limited marine requirement. They normally transmit their characteristic signal for one minute in every ten minutes continuously, using continuous carrier and tone-keyed modulation. This type of automatic radiobeacon is designed to operate unattended for long periods of time in areas that are isolated or inaccessible for part of the year.

Loran is a long-range radio aid to marine and air navigation providing accurate fixes at distances up to 750 miles by day and 1,500 miles by night. Two Loran stations operate in Nova Scotia, three in Newfoundland and two on the west coast. These stations, in conjunction with Loran stations of the United States Coast Guard, give service to ships and aircraft plying the North Atlantic and Pacific oceans. Decca is a short-range radio aid to navigation providing accurate fixes at distances up to 250 miles. Four chains of Decca stations are in operation — the Newfoundland, the Nova Scotia, the Anticosti and the Cabot Strait — giving service to ships off Newfoundland and Nova Scotia and in the St. Lawrence River and Gulf.

It has become general practice to equip merchant ships with radar and important buoys are fitted with radar reflectors to increase their radar visibility. A shore-based radar installation is in operation on the Lion's Gate Bridge across the entrance of Vancouver Harbour. Eight radar responder beacons are in year-round operation on the east coast, one on the west coast, and three in the St. Lawrence River; eight in the western Arctic and three in the Great Lakes are in operation during the navigation season. Low power transceivers are provided for use in emergencies at lighthouses, particularly at locations that would otherwise be completely cut off from assistance in case of illness.

Radio aids to air navigation are provided by the Ministry of Transport from coast to coast and from the United States border to the Arctic regions for use by Canadian aircraft and foreign air carriers flying over Canadian territory.

Low frequency radio aids operating on the frequency band 200-415 kHz are generally located within a distance of 50 to 100 nautical miles of each other to form the low frequency airways system. A few are located "off airways" in remote regions and a number of low power radiobeacons serve major airports as terminal and landing aids. The Ministry of Transport operates 345 en route, low frequency aids (20 of which are the older type radio range class) and 60 low power terminal radiobeacons. These facilities are used primarily in association with airborne direction-finding equipment. Voice channels on a number of low frequency aids are also used for aircraft communications and weather broadcast purposes.

Operating on the higher frequency bands VHF (very high frequency) and UHF (ultra high frequency), the Ministry of Transport operates 65 VHF omnidirectional ranges (VOR), 63 instrument landing systems (ILS) and 32 tactical air navigation systems (TACAN). At 30 locations the VOR and TACAN station are co-located and the complete station is called a VORTAC.

The VOR and VORTAC stations form the VHF airways system which closely parallels the older low frequency airways system. Additional stations are being installed on a continuing basis. Use of the VOR permits the pilot to select any desired course to fly to the station and, in the case of a VORTAC, additional information is provided which is a readout of the distance of the aircraft from the station.

Instrument landing systems provide radio signals which permit aircraft landings during periods of low visibility. Radio transmitters provide lateral and slope guidance to the approach end of the runway and also provide an indication of the distance to the runway threshold.

For air traffic control purposes, there are three main classes of radar in operation at Canadian airports consisting of 15 airport and airways surveillance radars with a range of 150 nautical miles, eight airport surveillance radars with a range of 50 nautical miles, and eight precision approach radars, which are short-range radars used for landing at major airports.

Radiotelephone communications are provided by 111 ground stations called Aeradio Stations, from which pilots may obtain weather data, air traffic control instructions and other information concerning flight safety. These stations operate for the most part on the VHF band but in the North and on international routes HF is utilized to provide the necessary long-range coverage. Thirteen of the 111 stations engage in international communications

services for Canadian and foreign air carriers. All these ground stations are connected to a fixed teletype network of more than 48,000 circuit miles to meet aeronautical communications needs.

16.1.4 Overseas services

The Canadian Overseas Telecommunication Corporation (COTC) was established in 1950 to maintain and operate external telecommunication services for the conduct of public communications by cable, radiotelegraph and radiotelephone and any other means of telecommunication between Canada and overseas points; to make use of all developments in cable and radio transmission and reception for external telecommunication services; and to conduct investigation and research with the object of improving and co-ordinating such telecommunication services with the telecommunication services of other nations. Increased use of all types of overseas telecommunication resulted in the COTC reporting a net profit of \$6.9 million for the year ended March 31, 1972; income for the year amounted to \$36.8 million.

The services currently being provided are as follows: direct telephone service between Canada and Antigua, Argentina, Australia, Austria, Barbados, Belgium, Bermuda, Brazil, Britain, Chile, Denmark, Finland, France, Federal Republic of Germany, Greece, Hong Kong, Iceland, India, the Irish Republic, Islands of St. Pierre and Miquelon, Israel, Italy, Jamaica, Japan, the Netherlands, New Zealand, Norway, Panama, Peru, Philippines, Singapore, South Africa, Soviet Union, Spain, Sweden, Switzerland, Trinidad, Venezuela and Yugoslavia; direct Telex service between Canada and Argentina, Australia, Austria, Barbados, Belgium, Bermuda, Brazil, Britain, Denmark, Finland, France, Federal Republic of Germany, Greece, Hong Kong, Iceland, Italy, Jamaica, Japan, Malaysia, Mexico, the Netherlands, New Zealand, Norway, Peru, Philippines, Portugal, Singapore, South Africa, Soviet Union, Sweden, Switzerland, Trinidad and Venezuela; direct telegraph service between Canada and Australia, Austria, Barbados, Belgium, Bermuda, Brazil, Britain, China, Cyprus, Denmark, Finland, France, Federal Republic of Germany, Hong Kong, Iceland, India, Islands of St. Pierre and Miquelon, Italy, Jamaica, Japan, the Netherlands, New Zealand, Norway, Peru, Soviet Union, Sweden, Switzerland and Trinidad; and Datel 600 service between Canada and Australia, Belgium, Britain, Federal Republic of Germany, Hong Kong, Italy, the Netherlands, New Zealand, Norway, Spain, Sweden and Switzerland.

The first transatlantic telephone cable, a joint project with the British Post Office, the American Telephone and Telegraph Company, Eastern Telephone and Telegraph Company and the Corporation, was brought into service in 1956. Since 1961, the following cables have been added: The Canada - Greenland - Iceland 24-circuit telephone cable (ICECAN), a two-party enterprise of the Great Northern Telegraph Company of Denmark and COTC; the Canada - Britain 80-circuit telephone cable (CANTAT); the Commonwealth Trans-Pacific 80-circuit telephone cable, a four-party enterprise of Canada, Britain, New Zealand and Australia connecting Vancouver and New Zealand and Australia via Hawaii and Fiji (COMPAC); the South East Asia Commonwealth 80-circuit cable, a six-party enterprise of Canada, Britain, New Zealand, Australia, Malaysia and Singapore connecting Australia, Hong Kong, Singapore and Kuala Lumpur via New Guinea and Guam (SEACOM); the Canada - Bermuda 640-circuit cable, a two-party enterprise of Canada and Britain (CANBER); and a number of circuits for Canadian purposes acquired in telephone cable systems connecting Bermuda, Jamaica, Puerto Rico and the United States. External cables landed in Canada licensed to COTC totalled 14,979 nautical miles; Western Union International Inc. accounted for 4,121 nautical miles of cable, Eastern Telephone and Telegraph Company for 4,680 nautical miles, and the New Brunswick Telephone Company Limited for 0.3 mile from Campobello Island to Lubec, Maine.

The Corporation also operated direct circuits via the Atlantic satellites with Argentina, Austria, Barbados, Belgium, Brazil, Britain, Chile, Denmark, France, Federal Republic of Germany, Greece, Italy, the Irish Republic, Israel, Jamaica, the Netherlands, Spain, Switzerland, Trinidad and Tobago, and Venezuela. The Corporation owns and operates two earth stations at Mill Village, NS with the large capacity satellites of the International Telecommunications Satellite Organization (INTELSAT) IV series. Mill Village I was constructed initially for the Department of Communications for research and experimentation. The Corporation also operates direct circuits via the Pacific satellite with Australia, Hong Kong, Japan, the Philippines and Singapore. The Corporation owns and operates an earth station at Lake Cowichan, Vancouver Island, linked to an INTELSAT IV satellite. In addition

to normal use of its system for television, public telephone, switched data, Telex and telegraph message traffic, capacity is available for private leased circuits.

Canada, represented by Canadian Overseas Telecommunication Corporation, is a signatory to the Operating Agreement of INTELSAT set up by participating nations for the development and operation of a global communications satellite system. The Corporation also represents Canada on the Commonwealth Telecommunications Council.

The Corporation, under a long-term agreement, has under charter from the Ministry of Transport the CCGS John Cabot, a combined ice-breaker/cable-repair ship used mainly for repairing cables in the western North Atlantic Ocean. The Corporation also operates a cable depot at St. John's, Nfld.

16.2 Radio and television

The broadcasting system in Canada has both public and private components. The earliest legislation with respect to Canadian broadcasting was passed in May 1932, creating the Canadian Radio Broadcasting Commission, but the basic principles for radio and television broadcasting have been revised over the years. The Broadcasting Act of 1968 entrusted the Canadian Radio-Television Commission under Part II of the Act with the direction of the Canadian broadcasting system. The Commission regulates and supervises all aspects of the broadcasting system except for technical matters relating to the planning and construction of broadcasting facilities, which are the responsibility of the Department of Communications.

The Canadian Broadcasting Corporation, a publicly owned corporation established by Act of Parliament (now Part III of the Broadcasting Act), provides the national broadcasting service in Canada. Its radio and television facilities extend from the Atlantic Ocean to the Pacific, and north to the Arctic Circle. The CBC, created in 1936 to replace the earlier public broadcasting agency that had operated since 1932, is financed mainly by public funds voted annually by Parliament, with supplementary revenue obtained from commercial advertising. The head office is in Ottawa and the main production centres are Toronto for the English networks and Montreal for the French networks. Regional centres operate across the country.

An applicant for a licence to establish and operate an AM, FM or TV broadcasting station, a community antenna television system (CATV) or a network files application forms with the Secretary of the CRTC. If found acceptable by the Commission, a public notice of the application is issued in the *Canada Gazette* and in one or more newspapers of general circulation within the area served or to be served by such station or system prior to the holding of a public hearing. The same procedure applies to an application for renewal or amendment of an existing licence.

16.2.1 Cable television

Basically, cable television is an antenna system linked to the individual subscriber's set by cable through a series of amplifiers, making it possible to bring in signals he could not otherwise obtain. Cable systems are capable of carrying AM and FM radio as well as VHF and UHF television signals. For this service, the subscriber customarily pays an installation fee and a monthly rental of about \$5. Systems range in size from 38 with fewer than 100 subscribers to five with more than 100,000. As at March 1972 there were 361 cable television systems operating in Canada, serving about 30% of all urban households in the country. Of these systems, 116 were producing local community programming on a regular basis, with an average of 18.2 hours of such programming being broadcast weekly.

Cable television is recognized as an integral part of the Canadian broadcasting system and policies and regulations that concern it must take into account the effects on other aspects of the national system. Cable television systems (CATV) are operated by private companies, each of which must be approved technically by the Department of Communications and licensed by the CRTC.

In July 1971, the CRTC announced its policy on cable television, emphasizing its mandate to provide the best possible service and widest choice from every source for the Canadian viewer. It is recognized that cable television provides an improved picture quality and extends the service area of companies dealing with broadcast transmissions. It has given viewers a greater variety of programs and has made possible a greater information flow. The policy established the composition of the basic services that cable television must provide, including CBC and other Canadian local and regional stations, a community channel and, where

requested by provincial authorities, access for educational programming. The CRTC will authorize cable television systems to carry distant stations using microwave or other electronic communication systems which technically extend the receiving system. However, the number of channels carrying signals which are received by microwave from commercial stations not licensed by the Commission will generally be limited to three. The CRTC may limit the authorization to fewer of these signals if it considers that local television service would otherwise be jeopardized.

The capacity of cable television systems to import distant signals can fragment local audiences and can have an adverse effect on local broadcasting outlets. Cable systems take programs off-the-air from locally licensed television stations and distribute them in numerous other areas without contributing to the production cost of these programs. The CRTC has concluded that cable television systems should pay for the Canadian programs and services received over the air by buying additional Canadian programs from local and regional licensees as well as from network sources for play or replay on their systems, thus providing additional exposure for Canadian programs. A policy of program deletion and replacement, where identical programs are scheduled by stations already serving the community, will enable stations already licensed to serve an area to regain their portion of the local audience without reducing or restricting viewer choice. The CRTC also encourages a similar policy for commercial messages. Although cable licensees will not be permitted to sell advertising, they may remove the commercial content of signals not licensed to serve Canada and insert replacement commercial messages sold by Canadian television stations.

16.2.2 Television broadcasting

Television programming began in Canada in 1952 in Montreal and Toronto, and colour broadcasting in 1966. Of the estimated 6.0 million households in the country, approximately 5.3 million are equipped with one or more television sets. An estimated 20% of Canadian households had colour television sets in 1972 with highest colour ownership in Alberta at approximately 30%, and lowest in Newfoundland at 8%. Two of the four Canadian television networks are operated by the CBC, one in English and one in French. The other networks are the English-language network of the CTV Television Network Limited which extends across Canada, and the French-language network TVA, at present serving only Quebec. In addition, the CRTC has licensed a third Canadian television network, Global Communications Limited, to begin operations on January 1, 1974. Initially, this network will cover Ontario.

As at December 31, 1972, Canada had 100 originating television stations, and 418 rebroadcasting stations. The CBC owned and operated 19 English- and ten French-language originating stations, as well as 108 English and 28 French rebroadcasting stations. There were 36 privately owned English-language affiliates of the CBC, with 152 rebroadcasting stations, and seven French-language affiliates operating another 27 rebroadcasting stations. The CTV television network operated 16 originating stations across Canada, with a total of 97 rebroadcasting stations. The TVA network had three originating stations. In addition, there were nine independent originating stations in the English language, operating six rebroadcasting stations.

From the start, the development of Canadian television was complicated by geographical and language factors. About half the people of Canada live near the southern border and have access to programs broadcast by one or all of the major US networks. This fact and the need to maintain a Canadian identity and to articulate Canadian interests contributed to the rapid development of Canadian television services. Toronto and Montreal now rank among the world's principal television production centres in the English and French languages; Vancouver, Edmonton, Winnipeg, Ottawa, Quebec City, Halifax, Moncton and St. John's are the regional production centres. The successful launching of the Canadian communications satellite ANIK I in late 1972 and the beginning of its operations in early 1973 will play an increasingly significant role in the efforts to bring radio and television services to the more remote parts of the country, particularly in the Canadian North.

16.2.3 Radio broadcasting

Despite the impact of television, radio remains an important means of communication for Canada's population. The CBC networks provide a wide variety of programming on a national basis and private local stations attract a large percentage of the listening audience. About 97% of the households in Canada are equipped with radio. In about half of them there is more than

one set, and often there is a radio in the car and one or more portable transistor sets. It is estimated that there is one radio for every two persons.

To serve this audience, the CBC operates an English-language network and a French-language network, and there are a considerable number of privately owned radio stations, some affiliated with the CBC networks and some serving an entirely local function. Of the 345 AM stations in operation in 1972, 38 were owned by the CBC and 307 were privately owned. The English network consisted of 29 CBC owned and operated stations and 69 private affiliates; the French network was made up of nine CBC stations and 38 private affiliates. There is also a second French-language network consisting of five private radio stations. The 200 unaffiliated private stations offered a basically local community service. Of the 87 FM stations, ten were operated by the CBC and 77 were privately operated. The private stations are financed entirely from advertising revenue.

In addition to a coast-to-coast English network and a French network that reaches a large proportion of the country's French-language population in eight of the ten provinces, the CBC provides regional and local services. Its networks extend over more than 28,000 miles. It has its own news service and offers a wide variety of programs in information, public affairs and entertainment. It also provides three special services — the International Service, the Northern Service, and the Armed Forces Service.

16.2.4 Canadian Broadcasting Corporation

Programming. The program schedules of the CBC are varied, with both light and serious material for a wide range of public tastes. They include news and commentary, documentaries, discussion and interview, music, drama, comedy, science, religion, agriculture, school and youth programming, community services and special events, sports, consumer affairs, arts and letters. CBC enterprises derived from program material include selected program texts in book form, audio tapes of radio talks and documentaries, recordings of Canadian music and poetry and, in the French service particularly, a variety of books, records and games for young children.

Canadian content in the 1972 television schedules was not as high as expected because of interrupted production during the labour dispute with the National Association of Broadcast Employees and Technicians, but in general it was still well above the 60% required by CRTC regulations. The number of Canadian artists and performers engaged for CBC programs was close to 30,000, at fees totalling \$23 million. The major part of the CBC's television programming, on both English and French networks, was in colour. The Corporation set up an internal study group, with management and production representatives, to forecast the changing television environment over the next ten years and to make recommendations regarding the particular role of the CBC.

During 1971-72, the CBC conducted an experiment in assisting small remote communities served only by LPRTs (unmanned network relay transmitters) to operate their own local radio services. A CBC broadcaster moved with his family to a town in northern Ontario for several months, set up a small studio facility and helped to organize and train a representative group of local residents who eventually took over the planning and production of all local material. Further experiments are planned, using slightly different technical facilities, with the hope that other LPRT communities can be encouraged to add local input to the service they receive from the CBC network.

Facilities and coverage. In 1972 the total length of CBC radio networks was 29,400 miles, and of CBC television networks 11,627 miles. About 98.7% of Canadians can receive CBC radio and 97.3% CBC television, but there still remain about 300 small pockets of 500 population or more where residents do not yet have service in their own language or in some cases have no service at all. An accelerated program to reach these unserved areas, as well as an over-all CBC coverage plan, is being developed in consultation with the Department of the Secretary of State, Treasury Board, the Department of Communications and the Canadian Radio-Television Commission.

Maison de Radio-Canada, the new Montreal headquarters for the CBC's French networks, began operation during 1972; it houses one of the largest broadcast centres in the world. A construction contract was signed for a new regional centre in Vancouver to consolidate CBC facilities there by about 1975. The site for a future Toronto consolidation was acquired by CBC through a land exchange agreement with Canadian National Railways.

ANIK I, the communications satellite of Telesat Canada, was launched from Cape Kennedy on November 9, 1972. The CBC will be among the users, leasing three of the satellite's ten channels and a number of earth stations across the country. The immediate advantage, starting in 1973, will be to provide live national television service to 25 northern communities previously served only by taped and delayed programming. Gradually increased use of the satellite will also make it possible to extend CBC French services across the country, to improve certain aspects of radio distribution, and to increase regional participation in network programming, especially in the area of news and current events.

Special services. Radio Canada International (RCI), the shortwave service of the CBC, broadcasts in 11 languages to Eastern and Western Europe, Africa, Latin America, the South Pacific, the Caribbean and the United States. Five new 250-kw transmitters have been installed since 1971 and work is continuing on antenna modifications to derive the full benefit from these new facilities, which are designed to provide a stronger signal to Europe and also to permit greater flexibility in shortwave service to North America. Among its 1972 projects RCI undertook a study of the feasibility of a broadcast service to Asia. The first broadcast to originate from the new Maison de Radio-Canada in Montreal was an RCI transmission on June 19, 1972. Radio Canada International also distributes Canadian music and spoken-word recordings to broadcasters in other countries.

The CBC continued its active participation in international broadcasting organizations such as the *Communauté des télévisions francophones*, the European Broadcasting Union, the Commonwealth Broadcasting Conference and the Asian Broadcasting Union. CBC programs were sold or exchanged in a variety of foreign countries: France, Switzerland, Britain, Japan, Federal Republic of Germany, Belgium, Sweden, the Netherlands, Finland, Italy, Poland, Hungary and the United States. In radio, special plans were announced for co-operation between CBC and National Public Radio, an association of non-commercial stations in the US.

The CBC Northern Service provides medium- and short-wave radio, and some taped and delayed television, to the people of the Far North. The radio services include both national and local broadcasts, with programs in Eskimo and Indian languages as well as in English and French. Northern radio stations also contribute to the CBC's national programming. In several northern communities, delayed television will be replaced by live network service during 1973 when the Canadian domestic communications satellite ANIK I goes into regular service. The development of local television programming is expected later, as circumstances allow.

Finance. Total operating expense for the year was \$237.2 million, an increase of 8.7% over the preceding year. This figure included \$11.3 million for depreciation and amortization not recoverable from the Parliamentary payment of \$181.0 million or from the amount of \$482,000 transferred from surplus. Of the \$181.5 million represented by the Parliamentary grant and the amount transferred from surplus, an amount of \$6.6 million was required to repay the principal of previous loans, leaving \$174.9 million to cover the net cost of operations. This, together with income of \$51.0 million (mostly advertising revenue which grossed \$49.4 million) and \$11.3 million for depreciation and amortization, resulted in gross expenditure of \$237.2 million. Advertising revenues equalled 21.9% of the Corporation's expenses, excluding depreciation and amortization.

16.2.5 Statistics of the broadcasting industry

Financial and other statistics of the radio and television broadcasting industry are obtained by Statistics Canada in co-operation with the Canadian Radio-Television Commission.

In 1971, 341 private radio stations and 64 television stations furnished reports to Statistics Canada. Operating revenue of the broadcasting industry for the year amounted to \$277.7 million, an increase of 5.4% over 1970. Of the total, radio accounted for \$127.7 million or 46.0% and television for \$150.0 million or 54.0%; in 1970, radio received \$116.4 million or 44.2% and television \$146.9 million or 55.8%. Revenue from national and network time sales represented 59.0% of the total broadcasting revenue and revenue from local time sales 41.0%; national and network time sales increased by 4.4%, local time sales by 12.1% and other incidental operating revenue decreased by 20.0% from 1970. Operating expenses in 1971 at \$433.2 million were 9.1% higher than in 1970. However, total operating revenue, including Parliamentary grants provided to the CBC, exceeded these expenses, resulting in a net operating profit of \$30.1

million for 1971, a 2.3% decrease from the net operating profit of \$30.8 million earned in 1970.

In 1971, there were 19,789 employees engaged in the broadcasting industry, an increase of 213 or 1.1% over 1970. Salaries and wages paid by the industry totalled \$189.5 million, an increase of \$17.7 million or 10.3% over 1970. Fringe benefits, including such expenses as staff pensions and hospitalization insurance, totalled \$11.4 million, a rise of 8.9% from 1970. After adjustment on account of other income and expenses and income taxes, the final net profit of the private sector of the broadcasting industry in 1971 was \$28.2 million compared with \$13.8 million in 1970.

Statistics of the cable television industry. Table 16.7 presents financial statistics of an annual series dealing with the Canadian cable television industry. This industry, comprising 326 operating systems, reported an increase of 23% in total operating revenue for the year ended August 31, 1971, rising to \$66.6 million from \$54.9 million for the previous year. Subscription revenue from individual subscribers and multi-outlet contracts accounted for \$62.8 million or 94.3% of the total. Operating expenses rose from \$30.3 million (adjusted to exclude interest and depreciation for purposes of comparability) to \$35.2 million in 1971, resulting in an operating profit of \$31.4 million compared with one of \$24.7 million in the previous year. After deducting interest, depreciation and provision for income taxes, the industry achieved a net profit to August 31, 1971 of \$6.6 million compared with \$5.0 million earned in the previous year.

16.3 Federal film agencies

16.3.1 National Film Board

The National Film Board, an agency of the federal government, was established by Act of Parliament in 1939 and reconstituted by the National Film Act in 1950 "to initiate and promote the production and distribution of films in the national interest". The Board's films are produced in Canada's two official languages and have made a considerable contribution to the country's culture and to the national identity. In addition to 35mm and 16mm films, the Board produces and distributes other visual aids material — filmstrips, 8mm loop films, slide sets, overhead projectuals, multi-media kits and photo stories.

The growing sophistication of film audiences and the increasing importance of film as a means of communication are reflected in the nature of the films produced — features, documentaries, informational films, films for the specific needs of government departments, and films designed for particular social purposes. The Board strives to serve as innovator of new cinema techniques, as well as a recorder of the nation's day-to-day evolution. Thus, new needs and greater public sensitivity have encouraged the Board's film-makers to explore new film styles and to experiment in new areas of film production, and there have been corresponding new departures in the distribution and use of films as more people turn to films as a matter of course for information and assistance in many activities.

In Canada, the Board's productions are distributed through community outlets, schools and universities, television stations, theatres and commercial sales. In all these areas annual figures show a steady and, in some instances, a marked increase. A large part of the 16mm community film audience is reached through film libraries, film councils and special-interest groups. The growing demand for films can be attributed to the wide range of subject matter available; the Board's catalogue lists 60 main and sub-categories. Original films are shown regularly over English- and French-language television networks in Canada as well as in theatres.

The scope of activity in Canada continues to grow with approximately 12,000 theatrical bookings in 1972, along with 5,369 telecasts of NFB films, and three quarters of a million screenings of films borrowed from NFB regional libraries. Sales of audio-visual educational aids including filmstrips, slide sets, 8mm loops, etc., numbered 67,820.

NFB film distribution outside Canada also continues to increase. The Board's films are seen at most of the world's international film festivals with gratifying response from judges, film critics and audiences. Film distribution abroad is promoted by the Board's offices in New York, London, Paris, Buenos Aires, New Delhi and Tokyo, and by posts of the Departments of External Affairs and of Industry, Trade and Commerce. NFB films are shown in theatres of more than 100 countries and the aggregate audience of films loaned by the Department of External Affairs in about 80 countries in 1972 was in excess of 70 million people. To increase the usefulness of films about Canada abroad, the Board makes foreign-language versions of

some films in many languages, and language versions are also made under contract with television networks and school film distributors in other countries. The Board co-operates with the Canadian Government Travel Bureau to distribute films in support of the Canadian travel industry to appropriate audiences in the United States, Europe and other areas. The total audience for Canadian travel films shown abroad in 1972 was close to 13 million, of whom 12 million were in the United States.

16.3.2 Canadian Film Development Corporation

The Canadian Film Development Corporation was established in March 1967 to promote the development of a feature film industry in Canada, and in so doing it co-operates with federal and provincial departments and agencies with similar interests. It invests in Canadian productions in return for a share of the profits, makes loans to producers and assists in the distribution of feature films. The Corporation also makes awards for outstanding accomplishments in production and makes grants to film-makers and technicians for further study.

Since its inception, investments in Canadian feature films assisted by the Corporation have increased from \$12 million to \$17.7 million; investment by the Corporation has increased to \$6.7 million, private Canadian investors contributed \$7.3 million and the balance came from outside Canada, mainly from major US film companies. Of the \$17.7 million, \$4.2 million went to Canadian laboratories and technical services and \$4.0 million to film-makers and other creative contributors, resulting in creation of 1,574 engagements for performers, 791 jobs for technicians and about 360 other jobs. A total of 83 films, 42 in English and 41 in French, have been completed or are in process of production. By the end of 1971-72, 34 of the 64 Corporation-backed feature films were in distribution, representing a total Corporation investment of \$3.4 million. To date, the cumulative return has been \$600,000; three of the films have recovered their full production costs and reached profit positions. However, the amount recovered in 1971-72 was \$99,500 less than in the previous year, due in part to new films placed in distribution being less well received by Canadian audiences and to a continuing decline in movie attendance.

Nine Canadian distribution companies invested in Canadian feature films in 1971-72, and several recently released feature films produced with Corporation assistance have received favourable reviews from both Canadian and international film critics.

Canadian participation in film festivals and other special showings in 1971-72, organized by the Corporation in collaboration with the National Film Board, the Departments of Industry, Trade and Commerce, Secretary of State and External Affairs and Information Canada — Expositions Division, resulted in excellent promotion for the Canadian feature film industry. At the Cannes Film Festival 16 feature films, most of which had Corporation backing, were screened to potential buyers, with moderate success in obtaining sales to foreign distributors. One film, *Fortune and men's eyes*, was chosen to represent Canada at film festivals in Venice and Belgrade. At the *Xe Journées cinématographiques de Poitiers*, a major cultural event held annually in France, Canada was the featured country; nine of the 25 Canadian films shown were produced with the help of the Corporation, the remainder coming from private industry. Eleven film productions from Quebec, four of which were assisted by the Corporation, were featured during Film Week at the Museum of Modern Art in New York City in February.

During 1971-72, the Corporation approved grants to groups and individuals totalling \$70,000. Four \$7,500 grants and five \$4,000 grants were made to aspiring film-makers on the west coast, six grants of \$1,250 to \$2,000 to similar applicants in Toronto, and \$10,000 was granted to the *Association coopérative de productions audio-visuelles* in Montreal as the balance of a \$50,000 grant awarded in the previous year.

16.4 Postal service

The basic function of the Canadian Postal Service is to receive, convey and deliver postal matter with speed and security. To do this, it maintains thousands of post offices and utilizes air, rail, road and water transportation facilities. Associated functions include: sales of stamps and other articles of postage, registration of letters and other mail for dispatch, insuring parcels, accounting for COD articles and transaction of money-order business. Also, because of its transcontinental facilities, the Post Office assists other government departments with such tasks as selling hunting permits, collecting government annuity payments, distributing

income tax forms and Public Service employment application forms, and displaying government posters.

Post offices are established wherever the population warrants. Those in rural areas and small urban centres transact all the functions of a city office. In larger urban areas, postal stations have full functions similar to the main post office, including general delivery service, lock-box delivery and letter-carrier delivery. Canada's larger post offices are complex semi-automated plants with conveyors and chutes, parcel and bag sorting machines, wrapomatic parcel sealing machines, photo-electric counters, intercom systems and observation gallery telephone systems. Outside the post office building there are mail-mobiles, automatic stamp-vending machines and curbside mail boxes.

The operating service of the Post Office Department is organized into four regions, each headed by a general manager reporting directly to the Deputy Postmaster General. The regions are further divided into districts, each headed by a district director. The operating and support functions required in the provision of postal service to the public are the responsibility of the local postmasters who receive technical and administrative assistance from district and regional offices at strategic points.

Postal service is provided throughout Canada. Canada's airmail system utilizes most transcontinental flights, supported by many branch and connecting lines, and links up with United States domestic and other international airmail systems. First-class domestic mail is carried by air between Canadian points whenever this would expedite delivery. Air stage routes provide an all-class mail service to many northern areas which can be served only by air. There are over 46,000 miles of airmail and air stage routes.

The Assured Mail Program guaranteeing next-delivery-day service of first-class letters if mailed early in the day, launched in Toronto in 1971, was extended to all major Canadian cities in 1972. By 1974 the country will be completely coded with postal coding machines operating in major centres; coding machinery is already in operation at the main Ottawa postal station.

At March 31, 1972, there were 8,564 post offices in operation; letter-carrier delivery was being provided in 254 urban areas and 5,093 private contractors were delivering mail to 798,727 rural and suburban households. In 1972, 504 city mail services transported mail between post offices and postal stations, collected mail from street letter boxes and delivered parcel post, and 439 side services transported mail between post offices and railway stations, wharves and airports. Intercity transportation of mail by highway motor vehicle was conducted by 659 major services, complemented by 846 feeder or stage services operating to and from smaller centres. Although many of the highway services have replaced rail for the transportation of mail, rail remained the principal mode for long distance movements of other than first-class matter.

Revenue and expenditure of the Post Office Department for the year ended March 31, 1972 were \$504.2 million and \$581.2 million, respectively: gross revenue receipts are received mainly from postage, either in the form of postage stamps and stamped stationery, postage meter and postage register machine impressions, or in cash. During the year, 43.8 million money orders were issued having a value of \$1,011 million, of which \$983.1 million was payable in Canada and \$27.8 million in other countries. The value of money orders issued in other countries and payable in Canada was \$8.7 million.

16.5 The press

Daily newspapers published in Canada in 1972 numbered 119, counting morning and evening editions separately. Combined circulation was about 4.7 million – 82% in English and 18% in French (Table 16.8). Publishers' surveys show that each newspaper is read by an average of three persons.

Daily newspaper advertising revenue in 1971 was \$327.9 million and circulation revenue was \$120.3 million. By comparison, advertising revenue of 341 private radio stations in Canada in 1971 was \$122.7 million and of 64 private television stations \$104.6 million. In 1972, there were 14 daily newspapers with a circulation in excess of 100,000, accounting for 55% of total circulation. There were 12 dailies published in the French language, ten of them located in Quebec. Although the circulation of daily newspapers blankets the more populous areas well beyond publishing points, smaller cities and towns and rural areas are also served by 825 weekly newspapers catering to local interests and exercising important local influence. The

Canadian society is also enriched by 87 foreign-language daily or weekly newspapers published in 27 languages, often sprinkled with English.

About 57% of Canada's daily newspapers are privately owned or independent. There are three major newspaper chains in the country, owned by Southam Press Ltd. (14 dailies), Thomson Newspapers Ltd. (31 dailies) and FP Publications Ltd. (six dailies). Both Southam and Thomson Newspapers are publicly owned companies with shares traded on Canadian stock exchanges. Papers in the Thomson chain are concentrated in the smaller cities. Southam accounts for about 25% of total daily circulation, Thomson for 10% and FP for about 7%.

In addition to their own news-gathering staffs and facilities, Canadian newspapers subscribe to a number of syndicated agencies and wire services, the largest being The Canadian Press which is a co-operative agency owned and operated by Canadian dailies. Largely by teletype and wirephoto transmission, it provides its 101 member newspapers with world and Canadian news and also serves radio and television stations. CP has its own news-gathering staff and each member newspaper provides the agency with important local news for transmission to fellow members and members share the cost in ratio to their circulations.

CP carries world news from Reuters (the British agency), from The Associated Press (the United States co-operative) and from Agence France-Presse (of France) and these agencies receive CP news on a reciprocal basis. CP maintains a French-language service in Quebec.

United Press International of Canada, the second major news wire service in Canada, is a private company and a part of United Press International World Service. It provides Canadian and international news and pictures to newspapers and TV and radio stations across Canada and is an outlet for Canadian news through United Press International facilities throughout the world. Certain foreign newspapers maintain bureaus in Ottawa and elsewhere in Canada to collect and interpret Canadian news.

Press statistics. Table 16.8 gives numbers and circulations of reporting English-, French- and foreign-language newspapers, by province, for 1971 and 1972, estimated from *Canadian Advertising*. Circulation figures are given for daily English- and French-language newspapers only. Such circulation figures are relatively easy to obtain because, in their own interest, newspapers qualify for and subscribe to the Audit Bureau of Circulation. For these, ABC "Net paid" figures have been used; "controlled" (free) distribution newspapers are not included. On the other hand, circulation data for foreign-language newspapers, weekly newspapers, weekend newspapers and magazines are incomplete and therefore not usable.

In 1972, 43 of the 101 daily newspapers and 33 of the 656 weeklies in the English language were published in centres of 50,000 population and over. French-language newspapers in centres of the same size numbered ten dailies of the total of 12, and 47 of the 169 weeklies, more than half of which were bilingual.

Publications in 27 foreign languages in 1972 numbered 116, compared with 111 in the previous year. Of these, 20 were in Ukrainian, 16 in Italian, ten in German, eight in Hungarian; the Dutch and Portuguese languages accounted for seven each, Greek for six, Chinese five and Yiddish four.

Magazines and related publications totalled an estimated 912 in 1972, of which 200 were classed as trade, industry and related publications, 157 as educational, 98 as services and directories, 86 as sports and entertainment, 64 as agricultural and rural; home, social and welfare publications and pharmaceutical, medical, dental and nursing publications each accounted for 61, and transportation and travel for 50.

Sources

- 16.1 - 16.1.1 Canadian Telecommunications Carriers Association.
- 16.1.2 Transportation and Communications Division, Industry Statistics Branch, Statistics Canada.
- 16.1.3 - 16.1.4 National Telecommunications Branch, Department of Communications.
- 16.2 - 16.2.3 Information Services, Canadian Radio-Television Commission.
- 16.2.4 Audience Services, Canadian Broadcasting Corporation.
- 16.2.5 Transportation and Communications Division, Industry Statistics Branch, Statistics Canada.
- 16.3.1 Information and Promotion Division, National Film Board of Canada.
- 16.3.2 Information Services Branch, Department of the Secretary of State.
- 16.4 Public Affairs Branch, Post Office Department.
- 16.5 The Canadian Press; United Press International of Canada Ltd.

Tables

.. not available
... not appropriate or not applicable
— nil or zero
-- too small to be expressed

e estimate
p preliminary
r revised
certain tables may not add due to rounding

16.1 Pole-line and wire mileage and number of telephones in use, 1967-71

Year	Systems reporting	Route mileage	Length of wire miles	Telephones in use			Per 100 population
				Business	Residential	Total	
1967	2,057	295,532	43,959,453	2,423,308	5,935,115	8,358,423	40.5
1968	1,772	298,000	48,110,000	2,557,059	6,260,787	8,817,846	42.1
1969	1,618	297,000	53,138,000	2,719,317	6,576,731	9,296,048	43.7
1970	1,376	297,727	56,230,618	2,853,601	6,896,410	9,750,011	45.2
1971	1,171	298,235	59,199,244	2,996,276	7,272,505	10,268,781	47.3

16.2 Telephones in use, by province, 1971

Province or territory	Telephones						
	On private lines		On party lines		Extensions		Coin telephones
	Business	Residential	Business	Residential	Business	Residential	Business
Newfoundland	13,058	62,854	1,389	27,662	20,786	14,544	1,216
Prince Edward Island	3,472	13,375	327	9,980	2,592	3,273	217
Nova Scotia	26,208	139,767	1,745	43,615	18,807	36,429	3,416
New Brunswick	19,061	99,191	957	42,095	18,236	33,421	1,900
Quebec	217,475	1,279,123	8,719	299,484	195,314	348,290	24,183
Ontario	313,695	1,742,173	10,162	484,976	260,065	628,554	28,153
Manitoba	39,352	222,295	2,783	55,061	28,401	49,410	3,233
Saskatchewan	33,172	181,800	2,871	60,488	21,412	43,139	3,098
Alberta	69,349	385,091	2,386	52,714	59,771	112,930	6,221
British Columbia	95,728	363,669	3,032	275,666	73,123	152,039	7,345
Yukon Territory	1,372	1,079	155	2,474	898	388	85
Northwest Territories	2,012	3,712	307	1,032	958	599	138
Canada	833,954	4,494,129	34,833	1,355,247	700,363	1,423,016	79,205
	Private branch exchanges		WATS ¹	Centrex	Mobile	Total	Telephones per 100 population
	Business	Residential	Business	Business	Business		
Newfoundland	3,626	—	—	—	204	145,339	27.5
Prince Edward Island	2,490	—	—	—	—	35,726	31.9
Nova Scotia	24,723	—	—	5,607	58	300,375	37.9
New Brunswick	23,394	—	93	1,770	2,204	242,322	37.9
Quebec	290,479	11	731	79,520	608	2,743,937	45.4
Ontario	435,213	81	1,648	136,350	1,423	4,042,493	52.0
Manitoba	52,004	9	112	3,514	125	456,299	46.1
Saskatchewan	34,559	12	8	—	245	380,804	41.4
Alberta	100,996	—	102	1,373	4,065	794,998	48.4
British Columbia	126,363	—	165	8,724	3,151	1,109,005	49.8
Yukon Territory	980	—	—	—	62	7,493	39.4
Northwest Territories	1,107	—	—	—	125	9,990	27.8
Canada	1,095,934	113	2,859	236,858	12,270	10,268,781	47.3

¹ On wide area telephone service lines.

16.3 Local and long-distance calls, calls per capita and average calls per telephone, 1967-71

Year	Local calls '000	Long-distance calls '000	Total calls '000	Calls per capita	Average calls per telephone		
					Local	Long-distance	Total
1967	13,053,115	357,414	13,410,529	650	1,562	42.7	1,605
1968	13,993,601	388,007	14,381,608	687	1,587	44.0	1,631
1969	14,596,659	434,292	15,030,951	707	1,570	47.0	1,617
1970	15,436,847	458,397	15,895,244	737	1,583	47.0	1,630
1971	16,439,365	495,454	16,934,819	779	1,601	48.0	1,649

16.4 Financial statistics of telephone systems, 1967-71

Year	Capital stock ¹ \$'000	Long-term debt \$'000	Cost of plant \$'000	Revenue \$'000	Expenditure \$'000	Full-time employees	Salaries and wages ² \$'000
1967	1,624,203	1,898,270	5,010,999	1,163,856	975,439	68,431	408,066
1968	1,657,588	2,089,386	5,467,326	1,268,387	1,095,763	66,699	436,543
1969	1,702,556	2,233,048	5,988,211	1,404,325	1,227,420	66,578	479,068
1970	1,827,746	2,522,040	6,571,028	1,568,726	1,366,645	68,334	540,674
1971	2,005,304	2,861,144	7,255,226	1,725,302	1,504,854	69,995	600,949

¹ Includes premium on capital stock.² Full-time and part-time.**16.5 Financial statistics of telephone systems, by province, 1971**

Province or territory	Capital stock ¹ \$'000	Cost of plant \$'000	Revenue \$'000	Expenditure \$'000	Full-time employees	Salaries and wages ² \$'000
Newfoundland	26,302	70,020	19,990	16,904	919	6,341
Prince Edward Island	5,230	19,838	4,814	4,114	228	1,324
Nova Scotia	54,668	204,647	49,156	41,991	2,646	17,800
New Brunswick	48,255	184,136	44,931	38,499	2,080	15,602
Quebec	1,553,112	4,508,217	1,095,910	943,069	17,379	159,518
Ontario	45,001	98,069	25,410	18,184	22,074	193,835
Manitoba	80	319,266	65,866	62,266	3,897	30,796
Saskatchewan	49,170	288,887	61,099	48,279	2,669	18,978
Alberta	954	718,448	149,974	143,854	7,824	67,680
British Columbia	222,531	843,699	208,152	187,694	10,268	88,900
Northwest Territories	—	—	—	—	11	175
Total	2,005,304	7,255,226	1,725,302	1,504,854	69,995	600,949

¹ Includes premium on capital stock.² Full-time and part-time.**16.6 Summary statistics of Canadian telegraphs, 1967-71**

Year	Operating revenues \$'000	Operating expenses \$'000	Net operating revenue \$'000	Pole-line mileage	Wire mileage	Em- ployees ¹	Telegrams '000	Cable-grams ² '000	Money transfers \$'000
1967	104,505	78,716	25,789	50,161	557,354	8,961	10,475	3,576	36,014
1968	116,666	86,426	30,240	49,497	573,276	8,687	9,673	4,057	45,163
1969	126,568	92,770	33,798	49,294	563,229	7,860	7,618	4,235	41,654
1970	136,948	100,068	36,880	49,813	553,644	7,678	6,906	4,729	57,867
1971	146,413	107,567	38,846	42,328	739,836	7,553	5,888	5,347	40,833

¹ Excludes commission operators.² Includes wireless messages and transatlantic Telex messages.**16.7 Financial statistics of the cable television industry, years ended Aug. 31, 1970 and 1971 (dollars)**

Item	1970	1971
OPERATING REVENUE		
Sales revenue		
Subscription revenue	51,713,859	62,791,051
Installation (or move) revenue	2,596,986	3,056,594
Other sales revenue	67,660	143,699
Incidental operating revenue	561,750	628,788
Total	54,940,255	66,620,132
EXPENSES		
Salaries, wages and fringe benefits	12,026,618	14,273,025
Program origination	264,139	503,743
Technical service		
Lease payments: head-end and distribution system	2,677,073	3,385,723
Repairs and maintenance to property, plant and equipment	2,732,641	2,760,945
Vehicle expenses (including lease payments)	1,085,599	1,253,072
Miscellaneous technical and service expenses	1,359,498	1,491,675
Advertising, sales and promotion	2,130,758	1,812,119
Administration and general		
Professional services (legal, accounting and consulting)	1,306,498	1,327,124
Office supplies and expenses	1,597,323	1,875,406
Miscellaneous administrative and general expenses	3,302,785	4,673,381
Other expenses not classified above	1,798,613	1,839,885
Total	30,281,545	35,196,098
Net operating revenue before interest, depreciation and other adjustments	24,658,710	31,424,034
Depreciation	10,548,703	13,458,866
Interest	4,719,205	4,587,957
Other adjustments, addition to (deduction from) income	842,299	(205,326)
Net profit before income taxes	10,233,101	13,171,885
Provision for income taxes	5,152,052	6,613,801
Net profit after income taxes	5,081,049	6,558,084

16.8 Estimated numbers and circulations of reporting English-language, French-language and foreign-language newspapers, by province, 1971 and 1972

Province or territory	1971				1972			
	Daily	Circulation ¹	Weekly ²	Weekend	Daily	Circulation ¹	Weekly ²	Weekend
English-language newspapers								
Newfoundland	3	41,242	6	1	3	42,881	8	1
Prince Edward Island	3	29,026	—	—	3	30,044	—	—
Nova Scotia	6	161,009	30	—	6	158,955	28	—
New Brunswick	5	105,114	14	—	5	110,140	13	—
Quebec	4	327,847	16	2	3	332,361	16	2
Ontario	47	1,946,853	243	3	47	1,957,238	238	2
Manitoba	7	252,222	58	—	7	235,826	58	—
Saskatchewan	4	133,016	92	—	4	135,437	93	—
Alberta	7	340,947	96	—	7	351,131	102	—
British Columbia	16	503,968	94	—	16	525,956	97	—
Yukon Territory and Northwest Territories	—	—	3	—	—	—	3	—
Total	102	3,841,244	652	6	101	3,879,969	656	5
French-language newspapers								
Nova Scotia	—	—	1	—	—	—	1	—
New Brunswick	1	8,431	3	—	1	7,861	3	—
Quebec	10	804,277	151	16	10	810,618	150	16
Ontario	1	38,218	5	—	1	37,786	5	—
Manitoba	—	—	1	—	—	—	1	—
Saskatchewan	—	—	6	—	—	—	6	—
Alberta	—	—	2	—	—	—	2	—
British Columbia	—	—	1	—	—	—	1	—
Total	12	850,926	170 ³	16	12	856,265	169 ⁴	16
Foreign-language newspapers ⁵								
Quebec	—	—	14	—	—	—	14	—
Ontario	3	..	50	—	3	..	49	—
Manitoba	—	—	10	—	—	—	10	—
Alberta	—	—	1	—	—	—	1	—
British Columbia	3	..	6	—	3	..	7	—
Total	6	..	81	—	6	..	81	—

¹ Circulation not reported for all newspapers.

² Includes semi-weeklies, tri-weeklies and bi-weeklies.

³ Includes 54 bilinguals — New Brunswick 2, Quebec 45, Ontario 3 and Saskatchewan 4.

⁴ Includes 58 bilinguals — New Brunswick 2, Quebec 49, Ontario 3 and Saskatchewan 4.

⁵ All daily and weekly foreign-language publications given here are considered to be newspapers.

Sources

16.1 - 16.7 Transportation and Communications Division, Industry Statistics Branch, Statistics Canada.

16.8 Information Division, Marketing Services, Statistics Canada.

Chapter 17

Manufacturing and merchandising

17.1 Manufacturing industries

Statistics on the manufacturing industries are issued by Statistics Canada on an annual, monthly and quarterly basis, depending on the type of data. The annual Census of Manufactures provides the basic annual data. Among the monthly figures available, two important types of information lend themselves to projecting figures of the annual Census of Manufactures: the survey of manufacturers' shipments, inventories and orders, and surveys of employment and related information.

The monthly shipments, inventories and orders series is published by manufacturing industry for Canada and the provinces, with breakdowns by industry group and by selected industry in the case of the totals for Canada. The data are derived from a survey of respondents to the annual census and are projections of the census total, subject to the qualification that only significant new entries into the manufacturing industries since the latest census are added.

The most comprehensive figures resulting from monthly surveys of employment have been estimates of the total number of employees in the manufacturing industries of Canada and the provinces, classified into durable and non-durable goods industries, but publication of these figures has been temporarily halted pending modification of the survey. Both the monthly shipments survey and monthly estimates of employment are based partly on statistical sampling. Both sets of monthly figures also yield totals for the calendar year; while the annual census includes some reports made on a respondent's fiscal year differing from the calendar year, the effect of this is not large.

The data obtained relate to establishments — roughly corresponding to the popular conception of a plant, factory or mill — and, for certain statistics, to non-manufacturing units known as "head offices, sales offices and auxiliary units". For some purposes, companies rather than plants or factories are of interest. For example, a company owning factories, mines and merchandising outlets will normally report its profit for the whole company rather than divide it among the different industrial activities in which it is engaged. Thus, the quarterly survey of corporation profits provides figures on sales, profits and certain other statistics for whole companies classified to industries on the basis of their principal activities (for instance, factories might be included in mining or mines in the manufacturing industry). Such figures are generally not comparable with establishment statistics.

Various other monthly and quarterly surveys relate to commodities rather than to establishments or companies. That is, they account for production or shipments of particular products without regard to the industry in which they are produced.

In addition to providing estimates of over-all employment in manufacturing (and other industries), monthly surveying of employment, hours and payrolls results in indexes of employment for larger establishments by industry and by province and sub-provincial area, and in data on average hours and earnings. Monthly indexes of industrial production provide measures of the physical volume of output of the manufacturing industries. That is, they measure output, net of the effects of price changes. These indexes afford annual averages which can be used to indicate movement in the real domestic product at factor cost originating in the manufacturing industries. In addition, many users find valuable information in the large number of monthly industry selling price indexes for various manufacturing industries.

17.1.1 Post-census data

Only preliminary data based on monthly or quarterly surveys are available for 1971 and 1972 as the results of the Census of Manufactures were being processed at the time of writing. Some factors influencing the levels of current and annual census figures in comparison with each other are mentioned in the preceding text.

Table 17.1 compares the value of shipments of goods of own manufacture, by province, for 1972 (from a monthly survey) with data for 1970 and earlier censuses, and Table 17.2 makes similar comparisons for industry groups. Table 17.3 gives company data on profitability in various industry groups for the years 1964-72. Because these latter figures relate to companies

and those derived from the Census of Manufactures relate to establishments (roughly speaking, plants), the two series are of only limited comparability.

17.1.2 Census of Manufactures

Results of the Census of Manufactures are published industry by industry as they become available. The census of 1970 was the latest for which all industries had been issued at the time this Chapter was prepared. Summary statistics are given in Tables 17.4 - 17.9.

Introduction of the 1970 revision of the Standard Industrial Classification substantially affected comparability of data for many industries compiled on the new basis with data for 1969 and earlier years. To assess the effects of classification changes on the same year's data and to provide data comparable with earlier years, the results of the 1970 Census were calculated according to both the 1970 and the 1960 revisions of the Standard Industrial Classification (SIC). In Table 17.5 the industry groups of the 1960 revision of the SIC have been used for 1970 as well as 1969 data, while in Table 17.9 the 1970 data alone are presented according to the 1970 revision.

Revision of the SIC did not affect the allocation of activity between manufacturing and other divisions of the classification and totals for all manufacturing industries as a whole are the same under either version. In this Chapter the basis of calculation of all 1970 data is the 1970 revision unless comparison with earlier years is involved.

Central Canada accounted for about four out of every five dollars of all value added by manufacture in the manufacturing industries of Canada in both 1969 and 1970; Ontario's contribution in 1970 was 52.5% and Quebec's 28.9%. British Columbia was in third place, accounting for some 8.1% of value added by manufacture. Alberta, Saskatchewan and Manitoba combined were almost as large a contributor, accounting for 6.9%, the Atlantic Provinces accounting for 3.6%.

An effective measure of the intensity of manufacturing activity by region is in terms of value added per capita of their population. The 1970 Canada average was \$938; Quebec and British Columbia were both close to this average with \$964 and \$757, respectively, but Ontario's average was much higher at \$1,378. The average for the Prairie Provinces was \$392 and that for the Atlantic Provinces, \$358.

17.1.3 Size of manufacturing establishments

The average size of a manufacturing establishment, in terms of numbers of persons employed, is somewhat over 50 persons but more than one half of the total work force in the manufacturing industries is in establishments employing 200 or more persons. While almost one third of the manufacturing establishments in Canada have fewer than five persons employed, including working owners, these establishments, because of their small average size, account for only about one in 75 persons of the working force of the manufacturing industries (Tables 17.10 - 17.12).

The average size of a manufacturing establishment in terms of shipments of goods of own manufacture was \$1.5 million in 1970 (Table 17.13). However, this average size is greatly affected by the large number of very small establishments which in fact account for only a minor share of over-all shipments. Establishments with \$1 million or more shipments of goods of own manufacture in 1970 accounted for about one establishment in five in the manufacturing industries, but they reported 88.8% of the total value of shipments of goods of own manufacture (Tables 17.14 - 17.15).

17.1.4 Exports of manufactured goods

Export statistics are not broken down into manufactured goods and other goods but the categories "fabricated materials" and "end products" give some indication of the degree of manufacture of such exports and the total for the two can be used as a substitute for manufactured exports. Because exports are not necessarily made by the manufacturer and because of valuation problems, the resulting series are not wholly comparable with Census of Manufactures data on manufacturer's shipments of goods of own manufacture. In the latter, for instance, work by smelters owned by mining companies is valued at an imputed charge to the mine, not at the value of the metal produced. Table 17.16 shows recent trends in exports of manufactures.

An important reason for the rising level of exports in the end products category has been the Canada - United States Agreement on Automotive Products, which went into effect in 1965.

17.2 The importance of large enterprises

Large businesses play an important role in the economy of a modern industrial state. Just how important a role this is may be measured by specially compiled statistics. Figures from Statistics Canada's first official report *Industrial organization and concentration in the manufacturing, mining and logging industries, 1968* are presented in this Chapter. The report contains other concentration measures for 1968 and comparable statistics for the 1965 data year of the Census of Industry. Concentration measures were published for 1965 by the Department of Consumer and Corporate Affairs, based on compilations prepared by Statistics Canada, covering 154 industries. A slightly different type of concentration study for 1948, also based upon Census of Industry data, was published by Princeton University in 1957. The 1968 report is, however, the first to cover all Canadian manufacturing industries with the exception of one small miscellaneous classification.

This method of organizing statistics of "industrial concentration" consists of expressing the share of the shipments of an industry accounted for by the largest four, eight and twelve, etc., enterprises as a percentage of the total for the industry, with further similar measures for other numbers of leading enterprises.

Compiled for all Canadian manufacturing for 1968, figures show that the largest four enterprises within the manufacturing industries (ranked by manufacturing value added) accounted for 7.7% of all manufacturing value added and 10.0% of all manufacturing shipments. The largest eight enterprises accounted for 12.1% and 14.0%, respectively.

Similar comparisons are available for individual industries on the basis of various numbers of leading enterprises as defined by their shipments. The most commonly cited statistic is the percentage of the industry's shipments accounted for by the four largest enterprises. For example, in Canada's largest manufacturing industry measured by shipments, motor vehicle manufacturers, the four largest enterprises accounted for 94.6% of all manufacturing shipments in 1968. This share of industry shipments, commonly referred to as a "concentration ratio" even though expressed as a percentage, shows motor vehicle manufacturing to be highly concentrated. An example of an industry with low concentration would be women's clothing factories, where the largest four enterprises accounted for only 7.7% of shipments in 1968. A weighted average of the concentration ratios for the top four enterprises in all manufacturing industries was 47.8%.

Some concentration ratios for the 40 leading industries of Canada — defined as those having the largest manufacturing shipments — are given in Table 17.17. The degree of concentration in industries in various industry groups is shown in Table 17.18, while in Table 17.19 some data are presented for the largest four, and succeeding groups of four enterprises operating in all manufacturing industries considered together. An enterprise consists of companies under common ownership or control. In this study, one company is treated as being controlled by another if the parent firm owns more than 50% of the voting stock. Most enterprises in fact consist of only one company and most of these have only one establishment, but some enterprises, especially in certain industries, have many companies and establishments.

As an example, the Aluminum Company of Canada (Alcan) had 22 establishments in nine industries of the 1968 Census of Industry, operated through nine companies or corporate entities. Two of these establishments were in the mining industry and are not included in any tables presented with this article. Table 17.19, showing aggregate concentration in the manufacturing industries, includes the 20 manufacturing establishments of the Aluminum Company of Canada added together and treated as one enterprise, and ranked according to the aggregate value added of these 20 establishments. In the data for the smelting and refining industry, only the five Alcan establishments in that industry are included before ranking enterprises by their shipments (in this industry production rather than shipments is used and integrated smelters' output is measured as an imputed custom charge to the mining industry). In the aluminum rolling, casting and extruding industry, six establishments or plants owned by four Alcan companies in that industry are treated as the operations of one enterprise.

Purpose of concentration statistics. Concentration in industry is generally acknowledged to be a most important economic phenomenon, although the precise significance of high concentration for various aspects of the behaviour of enterprises is still to some extent a matter of difference of opinion among specialists in this field. Economists use concentration measures for studying the competitiveness of industries and the effect of industry concentration on

company decisions regarding research, advertising expenditure, labour union negotiations, pricing policy, etc. For some of these purposes concentration measures must be derived from returns for companies rather than establishments or plants; the present statistics are calculated from returns for establishments or plants, making it possible to divide a company up among the various industries in which it is active.

Concentration statistics are particularly valuable when available for a period of years. Comparisons show fluctuations in the levels of concentration in an industry and may indicate if the changes are in response to the growth of the industry or whether the degree of change in concentration as distinct from the actual level of concentration can be explained by a particular cause or is affected by the behaviour of firms. Thus, concentration measures can be used to study changes in concentration within an industry over time, as well as to compare concentration at a point in time between different industries and, where possible, between the same industries in different countries. Concentration measures are now available for a number of industrialized countries though differing industrial classifications may affect international comparisons.

The interpretation of concentration measures are subject to certain limitations. Their purpose is to measure the extent to which a small number of large firms dominate the market, but when data for whole plants are added to give industry shipments a very mixed assortment of products may be involved. Often some products will be included which are really typical of other industries. For some purposes it would be better to calculate concentration ratios for shipments of particular products or product groups, regardless of the classification of the industries of the particular plants producing them. In either case, there is room for difference of opinion on what grouping of industries or products is appropriate. For example, pork and beef are sold in competition with each other, thus concentration for the two combined or for the slaughtering and meat processors industry as a whole may be preferable to concentration for either by itself. On the other hand, concentration of shipments of large electric motors may be preferable for some purposes to concentration of shipments of an entire industry such as manufacturers of electrical industrial equipment. For other purposes, the industry may be the better basis of measurement since, in competing, producers may be able to shift capacity between products. Concentration ratios for product classes are expected in due course.

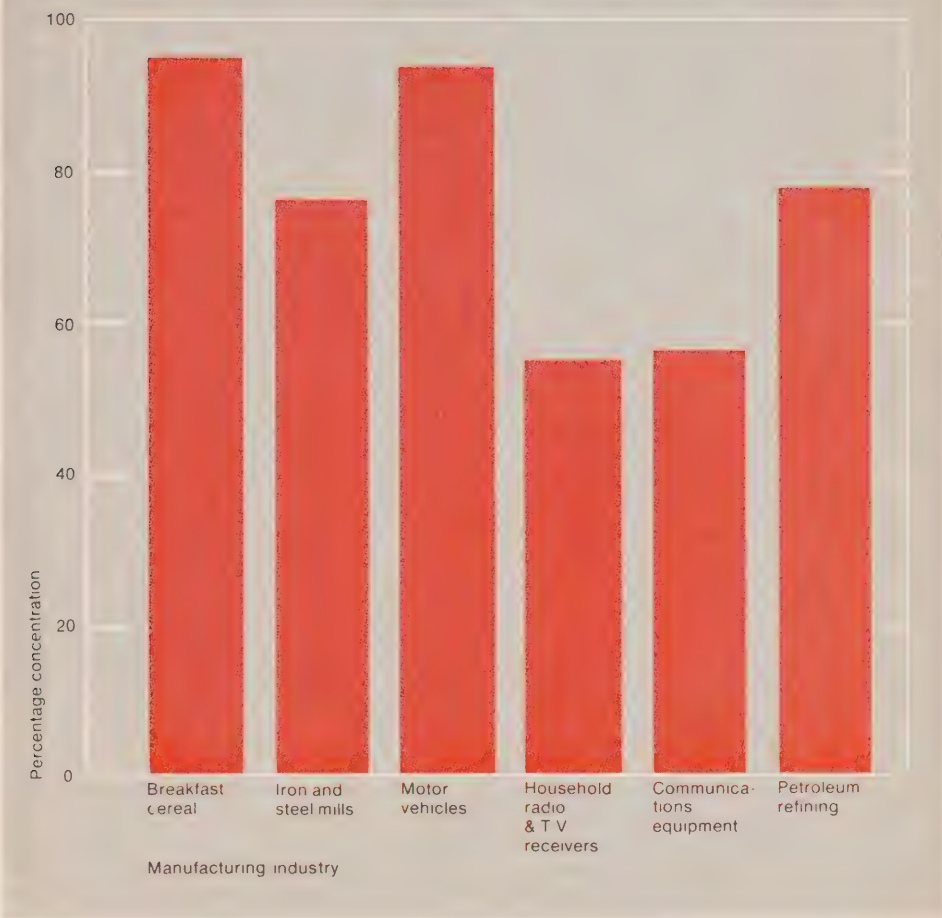
Imports and exports modify the meaningfulness of industry shipments as a measure of a market. The top four enterprises in the pulp and paper industry account for 33.7% of shipments but this does not give direct information on concentration in a definite geographic market since most shipments are exported. However, capacity may be potentially available to the domestic market. In the case of motor vehicle manufacturers, the 94.8% share of the top four firms in shipments masks the effect of both imports and exports of motor vehicles but it does show that the manufacture of motor vehicles is a highly concentrated activity.

For many industries or products, markets are regional or even local. The national concentration ratio for an industry like bakeries, showing 30.7% of shipments accounted for by the leading four firms, does not take this into account as concentration may vary in different markets.

The meaning of concentration is also modified in Canada by the existence of strong international enterprises. This means that the ability of an enterprise to compete in the Canadian market may be influenced to an important degree by the size of the foreign parent as well as the relative size of the Canadian subsidiary. Concentration measures, of course, do not take this into account. However, for many industries covered by concentration statistics, the percentage of shipments accounted for by leading producers will no doubt be a useful indicator of competitive conditions, particularly when a series of such indicators becomes available for several years.

Causes of concentration. The economic causes of concentration are diverse. It is likely that some industries are highly concentrated in a country like Canada simply because the market is small in relation to the minimum economic size of plant. In some industries, marketing may be difficult for small companies because of a need for a well developed network of dealers, while room exists for only a few such extensive networks. High costs of advertising and marketing may restrict the number of sellers and leave the industry's largest firms in a favoured position; this is particularly true of the consumer goods industries where individual consumers may be highly subject to the influence of advertising and of real or imagined differences between particular brands. In some national economies, the development of distinctive products

Concentration by industry,
top four enterprises, 1968



through research possibly favours concentration, although it could also have the opposite effect. In some countries, there may be actual artificial restriction of competition and entry by collusive agreements and predatory practices, legal or illegal. In Canada, the degree of concentration in many industries may be influenced by the existence of large multinational corporations; however, the effect in any individual industry would require considerable study as these foreign-owned enterprises may actually lower concentration in cases where the determination of a large foreign company to be represented in Canada may make for more medium-sized producers.

Location near markets or materials may make for relatively low concentration in an industry when the largest producers are characterized by extensive networks of plants. Examples of industries with geographical diversification and relatively low concentration, by comparison with other industries, are dairies, sawmills or ready-mix concrete manufacturers. There may be high concentration locally or regionally with transportability of the product influencing the impact on competition. A widely dispersed industry which is highly concentrated is breweries.

In an industry with a small number of plants, the top four firms will have a considerable proportion of the plants even if they have only one plant each. Thus in the motor vehicle industry, which has 21 establishments, the top four firms would have to have at least 19% of the establishments. This in turn sets the minimum possible proportion they could have of the industry's shipments, even if the top four firms had only one establishment, each only minimally above the industry's average size of establishment. But the top four firms in fact have six establishments or approximately 29% of the establishments and these are considerably above average size. The way in which the concentration in any particular industry arises can be analyzed in a similar fashion but this will not necessarily show the cause of the concentration. In some industries the leading firms may have a considerable share of the establishments as a result of appropriating a large share of the market. Establishment concentration and the relative size of the large firms' plants are "components" of the industry's shipments concentration.

Concentration in the 40 leading industries. It is not proposed to examine here the characteristics of industries generally in relation to concentration in 1968. However, some features of the more concentrated and less concentrated industries among the 40 industries with the largest value of shipments may be of interest. The concentration ratios for these industries in Table 17.17 may be compared with actual principal statistics for the same industries in Table 17.6. These industries account for 69% of 1968 shipments of the manufacturing industries.

Although chosen for their shipments size, the 40 industries have been ranked in descending order of the percentage share of the top four firms in each industry's shipments. The number of enterprises, establishments and certain measures of concentration are shown. (One industry had to be omitted because its concentration ratios for the top four firms are confidential under the Statistics Act.)

A striking feature of the 20 more concentrated industries among the 40 is that only three are not also among the top 20 industries in Canada in terms of manufacturing shipments. That is, they are larger industries than the less concentrated 20 industries, in terms of shipments. Equally noticeable is that the 20 more concentrated industries are much smaller than the 20 less concentrated industries in terms of total numbers of establishments. The 20 more concentrated industries together had only 2,244 establishments, compared with 15,457 establishments for the 20 less concentrated industries, although, as noted, the latter were smaller industries in terms of shipments. In other words, the more concentrated of the 40 industries were large industries with much larger average size of establishment.

A feature of the less concentrated of these industries which is perhaps surprising until considered more closely is that multi-plant operations are more characteristic of them than of the more concentrated 20 industries, measured by establishments per enterprise for the industry or for the leading four firms. While this spread is not large, its existence is due to the fact that the less concentrated industries include many which are widely spread geographically, so that firm growth has to be expressed in the building or acquisition of additional plants. The average number of plants per firm for the top four firms equalled or exceeded five in ten out of 20 of the less concentrated of the 40 industries, rising as high as 15.8 for feed manufacturers and 13.5 for bakeries and dairies. Only five of the 20 more concentrated industries had five or more plants per firm for the top four firms, although these again were mostly geographically diversified industries, soft drink manufacturers with 10.3 per firm being the highest.

In spite of fewer plants per firm in the top four firms relative to the group of unconcentrated industries, the more concentrated industries were nevertheless characterized by higher establishment concentration. The total numbers of establishments in the more concentrated industries being relatively small, the multi-plant operations of the leading firms tend to account for a larger percentage of the industry's establishments, even though the multi-plant activity of leading firms is somewhat less marked than in the less concentrated 20 industries.

In summary, the more concentrated of the 40 industries could be said to be large industries with few establishments, high average shipments per establishment and somewhat less multi-plant activity by leading firms than the less concentrated industries in the group. The ratio of average plant size for the leading firms to the industry's average plant size tends to be influenced by the fact that in extremely concentrated industries the leading firms themselves

largely determine the industry's average plant size. However, among all 40 industries the leading four firms have much larger than industry-average plant size and this plays an important role in the degree of concentration.

17.3 Government assistance to manufacturing

17.3.1 Federal assistance

The Department of Industry, Trade and Commerce is responsible for stimulating the establishment, growth and efficiency of the manufacturing, processing and tourist industries in Canada, and also for developing export trade and external trade policies. It assists Canadian industries to initiate and take advantage of technological advances, improve products and services, increase productivity and expand domestic and foreign markets through a wide variety of programs and services. At each phase of the product cycle — from research, development and design through production and marketing — the Department can assist with information and financial assistance.

Program for the Advancement of Industrial Technology (PAIT). The objective of PAIT is to promote the growth and efficiency of industry in Canada by providing financial assistance for selected projects concerned with the development of new or improved products and processes incorporating advanced technology, which offer good prospects for commercial exploitation in domestic and international markets. The program, initiated in 1965, was revised in 1970 to provide cash grants in lieu of loans, and has been expanded to include assistance for some specific activities outside of the development phase.

Financial assistance, normally 50% of the development costs and certain eligible preproduction and marketing expenses, is available to companies incorporated in Canada for projects to be carried out in Canada. Title to any invention or patent is vested in and remains the property of the company. Companies are expected to have the capabilities and facilities to undertake the development work and also to provide for the manufacture and sale of the resulting products. Further details are given in Chapter 9, Section 9.2.6.

Industrial Research and Development Incentives Act. This legislation, enacted in March 1967, provides cash grants or equivalent tax credits equal to 25% of capital expenditures of corporations for scientific research and development conducted in Canada, and for the increase in current expenditures in Canada for scientific research and development over the average of such expenditures in the preceding five years. To qualify for a grant, expenditures must be for scientific research and development which, if successful, is likely to lead to an extension of the business of the corporation. In addition, a corporation must undertake to exploit the results of the research and development in Canada and must normally be free to export products resulting from such research and development to all countries of the world (see also Chapter 9, Section 9.2.6).

Automotive Program. The Canada - United States Agreement on Automotive Products, signed in January 1965, provides for the removal of tariffs and other impediments to trade between the two countries in motor vehicles and original equipment parts. The basic objectives of the Agreement are: creation of a broader market to permit benefits of specialization and scale; trade liberalization to enable both countries to participate in the North American market on a fair and equitable basis; and development of conditions in which market forces would operate to attain economic patterns of investment, production and trade.

As a result of this program, Canada is now producing an increasingly larger share of the total North American output of vehicles and components. Canadian exports of vehicles and parts and employment in this industry have increased substantially, and investment in new plants and expansion of existing facilities have been extensive.

The Machinery Program was introduced on January 1, 1968 to increase efficiency in Canadian industry by enabling machinery users to acquire advanced capital equipment at the lowest possible cost while affording Canadian machinery producers tariff protection on what they manufacture. At the same time, Canadian machinery producers are protected by a single statutory rate of duty which applies immediately when they are in a position to supply. This is particularly significant for Canadian producers of custom-engineered machinery.

The program covers a broad range of machines classifiable under Tariff Item 42700-1 including general-purpose machinery, metalworking and woodworking machinery, construc-

tion and materials-handling equipment and various types of special industry machinery, such as pulp and paper and plastics industry machinery, and service industry equipment. The statutory rate of duty under that Tariff Item is 2½% British preferential and 15% most-favoured-nation.

The program provides that the duty otherwise payable on machines, accessories, attachments, control equipment, tools and components, imported under Tariff Item 42700-1, may be remitted if such remission is in the public interest and the goods imported are not available from production in Canada. A Machinery and Equipment Advisory Board advises the Minister of Industry, Trade and Commerce regarding the eligibility of machinery for remission of duty in accordance with the provisions of the Tariff Item. The Board, in turn, is assisted by the branches of the Department concerned with individual industries, including machinery manufacturing. Final authority for granting remission lies with the Governor in Council.

Under the program, machinery producers may also apply for remission of duty on production parts and components included in Tariff Item 42700-1 which they cannot procure in Canada. This provision is for the purpose of stimulating Canadian machinery manufacturers to specialize their production and enable them to compete more effectively.

Since June 18, 1971, the Machinery Program has been extended to imports under Tariff Item 41100-1 covering machinery for use in sawmills and logging. In the same year, the Machinery and Equipment Advisory Board took over from the Adjustment Assistance Board the responsibility for examining all tariff remission applications in respect of machinery and equipment or production tooling for the manufacture of original equipment, automotive parts and accessories.

Building Equipment, Accessories and Materials Program (BEAM) was established to help achieve greater efficiency and productivity in the manufacture and use of building equipment accessories and materials. The objectives of the program include: establishment of a comprehensive National Construction Information System; encouragement of modular dimensional standardization and co-ordination; acceleration of the industrialization of the building process; development and expansion of export markets; promotion of uniform building regulations and standards; and encouragement of building design excellence through awards programs.

The program is being implemented and is subject to further development through the Construction Industry Development Council and in co-operation with industry through the major associations. The Council, which is responsible to the Minister of Industry, Trade and Commerce, is national in scope, comprising 35 representatives of the manufacturing, design and contracting sectors of the industry as well as labour unions, universities and government. Co-operating directly in the BEAM program are the Canadian Construction Association, the Royal Architectural Institute of Canada, the Association of Consulting Engineers of Canada, the Specification Writers Association, the National Home Builders Association, and the Housing and Urban Development Association of Canada.

Having established the needs and priorities for construction information in Canada, ways in which a comprehensive and flexible information system can be developed were identified. A thesaurus of Canadian construction industry terms has been compiled in both English and French to assist in providing a means of indexing the system and to resolve the ambiguity in construction terminology. A glossary equating French and English construction industry terms has also been established.

The design and performance specifications for a National Construction Information System have been completed and work has commenced on the acquisition of data suitable to the system. To provide a commercial operations channel, a non-profit corporation known as the Canadian Construction Information Corporation has been established and is in the process of implementing the system.

The Department has continued the program to encourage the increased use of dimensional standardization and co-ordination of building components and buildings. Initially, conferences were held throughout Canada to acquaint policy-makers within the industry with the technological and economic advantages of modular standardization. These conferences continue to be followed up by a program of clinics of modular practice. In addition, a directory of modular building components is published annually.

Encouragement of greater industrialization of the building process through an understanding and application of a systems approach to building is being carried out through publications and through conferences and seminars held across Canada.

To encourage building design excellence, awards for the creative use of materials in architecture and structural engineering have been presented under the Design Awards Program. This program is sponsored by the National Design Council and the Department of Industry, Trade and Commerce in co-operation with the appropriate industry association within the framework of the BEAM program.

The promotion of universal use of the National Building Code is continuing. Manitoba has made it mandatory for all larger cities and towns. Ontario, New Brunswick, Nova Scotia and British Columbia have taken or are planning to take similar action and Quebec is studying its feasibility. A *Building standards index* lists all codes, standards and specifications used in the Canadian construction industry.

Export opportunities for the goods and services of the construction industry continue to be identified through the Department's trade posts abroad and in co-operation with industry.

Industrial design. The design program, authorized by the National Design Council Act 1961 and administered by the Department's Office of Design is aimed at promoting and expediting improvement in the products of Canadian secondary industry. The Office of Design is also responsible for developing and carrying out programs and projects pertaining to more widespread use of improved industrial design.

Design programs include: financial and technical assistance to educational institutions to introduce design training at the technical and university levels; seminars on various facets of design for the benefit of professionals, educators, business executives and the general public; awards programs for achievements over a broad field of design endeavour; scholarships for advanced training in industrial design in Canada and abroad; grants for design research and promotion by Canadians; and technical and financial assistance to committees and groups dedicated to the implementation of programs to foster effective design on a national, regional or industrial level.

Under the Industrial Design Assistance Program (IDAP) introduced in 1970, manufacturers are given financial support to develop new and improved designs by employing qualified industrial designers. The assistance is available to companies incorporated in Canada and is concentrated on relatively short-term projects of product innovation; it is limited to 50% of the projected design cost, subject to technical and commercial feasibility.

A National Design Council Chairman's Award for Design Management was introduced in 1970, to be presented to the management group which, in the Council's opinion, does the most to integrate and efficiently apply good design policy.

Defence Industry Productivity Program (combining the former Industry Modernization for Defence Exports Program and the Defence Development Sharing Program) is designed to enhance the technological competence of the Canadian defence industry in its export activities by providing financial assistance to industrial firms for selected projects. Emphasis is placed on those areas of defence technology having civil export sales potential. Assistance may cover the development of products for export purposes; the acquisition of modern machine tools and other advanced manufacturing equipment to meet exacting military standards; and assistance with preproduction expenses to establish manufacturing sources in Canada for export markets. Manufacturing equipment projects are selected for assistance on the basis that the machinery acquired will make a significant contribution to increased productivity. More details of this program may be found in Chapter 9, Section 9.2.6.

The Automotive Adjustment Assistance Program, which remains in force until June 30, 1973, offers opportunities to Canadian automotive parts manufacturers for expanded production, rationalization of output and reduced costs. In order to take advantage of these opportunities, Canadian parts makers must engage in substantial re-equipment and plant expansion programs. Term loans are made available for the financing of the acquisition, construction, installation and modernization of facilities or machinery and for use as working capital. Responsibility for the tariff remission aspects of the program was transferred to the Machinery and Equipment Advisory Board, effective June 1, 1971.

General Adjustment Assistance Program (GAAP). established in 1968 and revised in 1971, helps manufacturers take advantage of export opportunities arising from the Kennedy Round and assists manufacturers of textile or clothing goods or footwear to improve their competitive position in domestic or export markets. The program also provides assistance to manufacturers who have been injured, or are threatened with serious injury, as a result of Kennedy Round reductions of Canadian tariffs, and to manufacturers of textile or clothing goods or footwear who require financing to adapt efficiently to disruptive import competition which is threatening, or causing, serious injury. Assistance under the program is also available to firms that provide marketing, financing or other services essential to the operations of manufacturers described above.

The governing Regulations require that eligible firms for whom loan insurance or direct loans are approved be unable to acquire the financing provided by the Board or through the Board's support from conventional sources on reasonable terms and conditions.

Assistance is available in three forms: government insurance against the risk of loss on loans made by private lenders for the purpose of financing viable restructuring projects; direct government loans to eligible applicants in special cases; and grants covering up to 50% of cost to manufacturers who require outside consulting assistance to develop restructuring proposals. The program is administered by a General Adjustment Assistance Board on which both private industry and government are represented.

Ship Construction Subsidy Regulations. The Department has been responsible since 1967 for shipbuilding matters, including the Ship Construction Subsidy Regulations and certain sections of the Income Tax Act and Regulations. The industry continues to respond to the policy of national competition for government shipbuilding requirements and has made active use of the subsidy program for commercial vessels. The latter provides a subsidy rate of 17% for ships other than fishing vessels. For fishing vessels, the subsidy rate is 35%. With the support of other programs, the Department has encouraged the development of production of marine components and exports in this area have been increased. Also, assistance has been given to several shipyards to encourage modernization of shipbuilding facilities.

Shipbuilding Temporary Assistance Program (STAP). Because the demand for Canadian-flag ships has been in a temporary decline and assistance under the Ship Construction Subsidy Regulations is not applicable to foreign-flag vessels, the Shipbuilding Temporary Assistance Program was announced in November 1970 to enable Canadian shipyards to maintain their employment levels by building for the world market. STAP shipbuilding grants, paid to shipyards building for registration in countries other than Canada, were initially at 17% of approved cost (14% for very large vessels) but are now 15.5% and 12.5%, respectively. Some \$271 million of shipbuilding contracts have been obtained (to December 1972) by Canadian yards with the assistance of this program.

Pharmaceutical Industry Development Assistance (PIDA). This program was authorized by Parliament in March 1968, and is administered by the Pharmaceutical Industry Development Advisory Committee. Through PIDA, the Department encourages development of a more efficient pharmaceutical industry; by means of financial assistance, firms are encouraged to form corporate units able to employ competent management and other personnel, perform suitable research and development and undertake effective marketing programs. It enables generic drug manufacturers to improve their ability to manufacture and market lower-priced prescription drugs at more competitive prices by reorganization of their manufacturing and marketing systems. The program is particularly helpful to smaller drug manufacturers. Direct loans at commercial interest rates are available to provide the capital necessary for implementation of approved pharmaceutical industry development proposals.

Program to Enhance Productivity (PEP). PEP offers outright grants of specific amounts up to \$50,000 to support half the costs of carrying out intensive feasibility studies on the use and application of innovative techniques to achieve significantly lower unit costs of production in manufacturing and processing industries in Canada.

To be considered for a grant, an applicant should have under development, with reasonably good hope of success, some application of existing technology to the production phase of his operation as distinct from the research stage. If further data on the projected gain

in productivity cannot be obtained without committing additional financial resources to a more extensive in-depth feasibility study, and if the investigation would otherwise be shelved, money may be made available under PEP. The program is, however, designed to eliminate support for projects that would in all probability be carried out in the normal course of events.

If the study includes carrying out market research, not more than 25% of total approved costs should represent this component.

Program for Export Market Development, an incentive-based program, is designed to help increase exports of Canadian goods and services on a continuing basis. Under the plan, Canadian companies may obtain repayable grants toward defraying approved expenses which would otherwise inhibit their attempts to earn a share of markets. The program is divided into four main components defined in terms of regions, products and the marketing techniques concerned.

Section A, incentives for participation in capital projects abroad, are applicable anywhere outside Canada. The term "capital projects" as used here is intended to describe facilities, systems and other projects requiring the provision of skilled services, engineering products and other capital goods. Section B, market identification and marketing adjustment, emphasizes manufactured goods but it can be more widely applied. It is applicable anywhere outside Canada and the continental US. Section C, participation in trade fairs abroad, is not restricted as to markets, products or services. It is applicable anywhere outside Canada but participants in Canadian national stands at the same fair abroad are not eligible. Section D, incoming foreign buyers, also has no restrictions on markets, products or services. Buyers from anywhere outside Canada and the continental US may be invited by a company to examine products and production in Canada.

The Department's contribution will normally be 50% of eligible costs incurred. If a company receiving assistance succeeds in obtaining the business sought, repayment of the Department's contribution will be required, but no repayment is required if the company is unsuccessful.

Promotional Projects Program. The program of trade fairs and missions was set up to promote the export of Canadian products and services. It is an expression of federal initiatives in which Canadian industry is invited to participate. The program consists of a number of sponsored promotions designed to meet particular requirements and includes: trade fairs abroad — vertical and horizontal; missions — incoming and outgoing; in-store promotions; travelling sample shows; incoming trade delegates and buyers program; export-oriented training program; and under the programs for export market development, the incentive for participation in trade fairs abroad; and the incentive for incoming foreign buyers.

Fashion Design Assistance Program (FDAP) has as its primary objective an increase in competitiveness of the Canadian apparel, textile, leather and footwear industries at the international level by encouraging greater Canadian design creativity and upgrading product quality, building a prestige image of creative fashion design in Canada to attract Canadian and foreign buyers, and by providing an environment to encourage and retain Canadian fashion design talent.

There are two main aspects of the program — Designer Development and Fashion/Canada. The aim of the Designer Development component is to expand opportunities for the development and appreciation of trained Canadian fashion designers. Fashion/Canada encourages fashion awareness by promoting good design and workmanship by Canadian designers.

Counselling Assistance to Small Enterprises (CASE) provides an opportunity for owners and managers of small businesses engaged in manufacturing or tourism to benefit, at nominal cost, from a service provided by retired business executives selected for their management experience. Under special circumstances, government contributions can also be made toward the cost of engaging consulting firms. The program operates from offices in Montreal and Winnipeg which were opened in 1972.

Through the CASE program, the managements of small companies can discuss their particular problems with experienced businessmen, explore new ideas to help their businesses grow and examine new methods for improving productivity. A CASE counsellor will visit the applicant's place of business, make a detailed analysis of the company's problems and

opportunities and recommend action to be taken. He may also help to implement these recommendations.

In the allotment of CASE resources, priority will be given to Canadian-controlled businesses.

Development of Management Courses Program is designed to help non-profit professional, industry, business or management associations develop management retraining or upgrading courses of high quality. Assistance is in the form of government grants that may cover up to 100% but usually not more than 75% of the cost of developing new course material or revising the material for existing courses.

17.3.2 Provincial assistance

Assistance given by the respective provincial governments to manufacturing within their own territories is outlined in the following paragraphs.

Newfoundland. The Newfoundland government, through its Department of Industrial Development, offers advice and assistance to prospective industry in determining desirable plant locations in the province and in the preparation of feasibility studies. Information can be made available on the source and availability of raw materials, transportation costs, labour costs and a variety of other economic data. The government will transport industrialists anywhere in the province so that they may obtain a first-hand look at potential plant sites. The Department of Industrial Development also provides liaison with the public and private sectors.

Financial assistance may be provided by the Newfoundland and Labrador Development Corporation. This assistance may take the form of loans against the securities offered by the prospective enterprise, or the acquisition and holding of shares or other securities of any company wherever incorporated, with the right of the enterprise to buy back these shares. This Corporation will also be providing a complete range of management advisory services.

The government may provide direct financial assistance based on cost-benefit analyses. Buildings, where they exist, and land may be provided on very attractive terms. Industrial training facilities are available throughout the province for specialized courses to meet the requirements of incoming industry.

Prince Edward Island. Provincial assistance to manufacturing is generally funnelled through Industrial Enterprises Incorporated (IEI), a Crown corporation of the provincial government. It is prepared to offer assistance to prospective Island industries by way of long-term financing at attractive rates of interest. IEI assists industries by acting as a clearing house for information regarding alternate sources of credit in financing through other lending institutions or outright grants that may be available from government sources. IEI is also equipped to provide research and management services to existing Island industries or to groups contemplating new projects on the Island.

The Act incorporating IEI is particularly flexible in the terms of reference describing the manner in which IEI may participate financially in assisting industry in the province. Participation is generally by way of a first mortgage on facilities but could well be in the form of an equity position. The ratio of IEI's participation to that contributed by the investors has been very generous in the past and, necessarily, will be negotiated on an individual project basis in the future.

Nova Scotia. The province offers two programs of direct financial assistance to new or expanding manufacturers.

Industrial Estates Limited (IEL), a provincial Crown corporation formed in 1957, may finance 100% of the cost of land and buildings and up to 60% of the installed cost of machinery and equipment of new or expanding Nova Scotia manufacturers. The terms and conditions of financing are negotiable. IEL has made special arrangements with most Nova Scotia municipalities to limit local taxes paid by its clients to 1% of the building cost for a period of ten years. Additionally, IEL's Small Business Financing Division will assist manufacturing or processing industries having annual sales under \$750,000 through loans, loan guarantees and minority equity positions.

The Nova Scotia Resources Development Board, affiliated with the Department of Development, is an amalgamation of already existing boards including the Industrial Loan

Board, the Farm Loan Board, the Fisherman's Loan Board and the Timber Loan Board. The new Board will provide financing for tourism facilities, farms and primary agriculture processing, fish plants and vessels, saw and planing mills, and timberland.

Special municipal tax assistance which is authorized under the Nova Scotia Bonus Act may provide assistance to new or expanding firms by limiting either the assessment or the tax rate for a specified period of time.

The province co-operates closely with the Cape Breton Development Corporation, a federal agency, and contributes financially to some of the industry-development projects initiated by it (Chapter 4, Section 4.5.2).

New Brunswick. The Department of Economic Growth co-ordinates and implements the broad strategy of economic and industrial development activities in the province. It has three operating branches.

The Special Programs and Transportation Branch is responsible for directing and co-ordinating provincial transportation policy, the Special Areas Agreements between the province and the federal government as they apply to Saint John and Moncton, assistance to community groups to foster regionally initiated actions to establish and enlarge local industrial development, and provincial communications policy. The Transportation Division, working closely with its federal and provincial counterparts in the Atlantic Provinces, is involved with the Federal-Provincial Committee on Atlantic Regional Transportation and the Maritime Provinces Transportation Committee set up by the Council of Maritime Premiers. Through these bodies the Division advocates the development of national and regional transportation policies that make use of transportation facilities as development tools while recognizing the inherent characteristics of regional and provincial transportation systems. It is also concerned with airport and port developments and industrial transportation problems.

The Branch's Special Areas Division plays a major role in co-ordinating all aspects of the expansion and infrastructure programs in Saint John and Moncton under the Special Areas Agreement. The Special Areas Agreement, between the province and the federal Department of Regional Economic Expansion, outlines a joint strategy for maximizing economic and social adjustment by creating new employment opportunities through improving the environment to attract new activities in secondary manufacturing, commercial services and the expansion of resource-based industry in the two areas. Approximately \$91.5 million were provided under the Agreement for various infrastructure projects. The Special Areas Division assists the municipalities in developing an appropriate growth strategy and monitors the adherence of planning, design and construction functions to the time and financial schedules outlined in the Agreement.

The Regional Development Division's activities are concerned with assisting regional and community groups in areas of the province other than the Special Areas to organize themselves so as to be better equipped to accommodate industrial development. The Division has confined its activities primarily to the northeast of the province, the area encompassed by the FRED Agreement, where its function is largely to provide technical support in the industrial development field to the broader functions of the Community Improvement Corporation the provincial agency set up to administer the FRED Agreement. In other areas, the Division provides advisory assistance to communities on such subjects as organization of local development efforts, local promotion, and industrial land development and administration when requested to do so. Communities assisted in the past include Edmundston, Sussex, McAdam, Plaster Rock, Newcastle, Chatham and Nackawic.

The Branch has recently assumed a new role in the communications field. Activities include formulating provincial policies relating to all forms of communications media, particularly increased radio and TV coverage, especially in the French language, and to carry negotiations with federal, provincial, and regional bodies concerned with the communications field.

The Trade and Industrial Services Branch, through its Resource Utilization Division and Industrial Services Division, provides a support function for secondary industry in the province. The Industrial Services Division complements programs offered by the federal Department of Industry, Trade and Commerce in industrial research and development, product design, industrial technology, productivity, and duty-free imports of production machinery with a substantial external trade promotion program. This program includes trade

fairs and missions, licensing arrangements and assistance in documentation, market research, and identification of export opportunities. The Division also offers technical assistance through the provision of industrial engineering assistance, production control, and other engineering services and is responsible for implementing the government's program of maximizing New Brunswick product content in public construction. The Resource Utilization Division is primarily concerned with the provision of a variety of marketing, technological and management services to natural resource-based industry in the province. For the next few years the Division's primary role will be somewhat limited to the problems of the wood-using and sawmill industries in the province although it is becoming involved initially on a project basis with mines, minerals, and other resources, particularly the peat moss industry.

The Investment Management Branch is concerned primarily with review and evaluation of industrial projects for which application has been made to the New Brunswick Industrial Finance Board for financial aid. This assistance may take the form of a guarantee for a bank loan or bond issue, a direct loan, and the follow-up services to firms to which the Industrial Finance Board has already been committed. The principal form of assistance is a bank loan guarantee primarily for expansion of existing industry unlike the approach of the New Brunswick Development Corporation which is concerned mainly with developing and locating new industry in the province. The Branch, however, is still active in receiving new industry which may prefer to deal directly with the province.

The Investment Analysis Division of this Branch assists firms in drafting development plans and in making application for financial assistance. It evaluates and makes recommendations on projects presented to the Industrial Finance Board and ensures that adequate safeguards are incorporated into agreements to provide provincial assistance. The Management Services Division is concerned primarily with identifying impending problem areas and taking action to protect provincial commitments in industrial projects. The Division provides for regular audit and inspection of firms receiving financial assistance, for management and consultative services to firms in order to overcome or avoid problems, and for trustee management in severe situations where provincial funds are seriously threatened. Both Divisions of this Branch attempt to ensure maximum utilization of federal and provincial development programs in order to facilitate the establishment and expansion of industry.

Quebec. In 1971, legislation dealing with financial aid to industry was combined under two Acts: Bill 20, the Quebec Industrial Development Assistance Act, which created the Quebec Industrial Development Corporation; and Bill 21, "an Act to promote industrial development through fiscal advantages". The Industrial Development Corporation replaces the former Quebec Industrial Credit Bureau which has been abolished.

The aim of these programs is to help transform Quebec's industrial structure through aid to new high-technology industries and to already existing industries which regroup their production facilities to improve their competitive position. Companies unable to obtain financial assistance elsewhere at reasonable rates are eligible for aid under these programs if it would contribute to the economic development of the province or any of its regions. The amount of assistance granted depends on the area, the kind of goods manufactured and the production techniques used.

The Industrial Development Corporation may grant financial assistance to a manufacturing establishment making a capital investment for construction; purchasing or expanding a plant or factory; investing in machinery, tools or equipment; purchasing licences or patents; or improving the financial organization of the business. Depending on the nature or needs of the company concerned the assistance may take various forms: loans at lower-than-market interest rates; assumption of part of the costs of a loan; exemption from repayment of part of the loans which the business has contracted with the Corporation in accordance with established criteria as to productivity and the number of new jobs created; purchase, by the Corporation, of buildings or machinery for resale or rental to a manufacturer; and purchase of shares of any manufacturing industry up to a maximum of 30% of the paid-up capital stock of the company.

Under the new legislation, the government may grant a reduction in income tax on corporation profits on any investment in Quebec by manufacturers provided the amount of the investment is at least \$150,000. Permissible investments are for building or expansion of plants or factories or for the purchase of new machinery, tools or equipment. In computing their

profits, approved companies may deduct up to 30%, 50% or 100% of their investment depending on the region in which the investment is made.

A manufacturing or processing plant selling and delivering part of its Quebec production outside the province may receive exemption from provincial sales tax on goods purchased for its use or consumption in the proportion that its out-of-province sales bears to its total sales for the year. Under the same program, a business may be exempt from provincial sales tax on gas or electricity used directly for processing.

Through its support of the Quebec Industrial Research Institute, the province makes technical information and assistance available to industry throughout the province (see Chapter 9, Section 9.3.3).

Ontario. The Ontario Development Corporation and the Northern Ontario Development Corporation are agencies of the Crown established by the government of Ontario to provide financial and advisory services to business in order to stimulate industrial growth, economic development and employment opportunities in the province. They report to the Ontario legislature through the Minister of Industry and Tourism. The corporations' activities are governed by boards of directors composed of representatives from the business and financial communities and labour.

Loan programs administered by the ODC and the NODC include interest-free performance loans which may be forgiven over six years and term loans with repayment fitted to meet the individual circumstances of each borrower. Performance loans are available to Canadian-owned secondary manufacturing industries for new or expanded facilities in designated areas. Major tourist attractions may also qualify.

Term loan programs include: Small Business Loans to Canadian-owned companies in all parts of the province to expand their operations in fields of manufacturing or services closely allied to manufacturing; Venture Capital Loans to Canadian-owned companies for the introduction of new technology; Pollution Control Equipment Loans to companies which must install approved pollution control equipment and are unable to finance it from their own resources; Tourist Industry Loans for tourist resort operators to upgrade their facilities; Export Support Loans to finance the production and warehousing of goods for export against specific orders; and Industrial Mortgages and Lease-backs to assist with the establishment of new manufacturing facilities.

The ODC administers Northam Industrial Park in Cobourg and Huron Industrial Park in Centralia with industrial space and housing available on a rental basis. It also manages the sale and leasing of property in Sheridan Park near Toronto to companies engaged in industrial research and development.

The Business Development Division of the Ministry of Industry and Tourism provides advisory services on financial and marketing matters through three branches. The Industrial Development Branch provides advice on location and expansion of manufacturing facilities, sets up manufacturing arrangements for Ontario companies and provides technological research and advice to improve and promote products. Seminars and product development clinics keep businessmen informed of market situations and advances in technology. The Trade Development Branch can help potential or existing exporters to participate in sales and trade missions, and trade exhibitions; bring foreign buyers to Ontario and arrange interviews for manufacturers. The Tourism and Service Industries Development Branch provides information on location and expansion of tourist operations, economic studies and other pertinent material; it advises tourist and service industry operators on ways to increase and improve their operations.

The International Division operates a trade, industry and tourist incentive program in 16 world markets: New York, Chicago, Los Angeles, Boston, Atlanta, Cleveland, Minneapolis/St. Paul, London, Frankfurt, Milan, Stockholm, Vienna, Brussels, Tokyo, Sao Paulo and Mexico City. The Ministry of Industry and Tourism opened a Trade and Travel Centre in Toronto in 1972. This Centre offers display space to manufacturers, interview rooms for discussions on potential licensing arrangements, joint ventures and exporting agreements, and houses a theatre for the showing of films and slide presentations.

The Sheridan Park Corporation has established the Sheridan Park Research Community at Mississauga, which has research laboratories and facilities that offer an interchange of ideas and techniques and help participating companies to stay competitive in world markets.

Research creates new and improved products as well as better utilization of natural resources. This unique \$42 million community employs some 1,600 persons in ten resident companies and corporations. (See also Chapter 9, Section 9.3.4.)

The Ontario Economic Council is a 20-member advisory group which reports to Cabinet on methods to encourage maximum development of human and material resources throughout Ontario. Members of the Council are private citizens who serve without pay. (See also Chapter 4, Section 4.5.3.)

Manitoba. The Department of Industry and Commerce, established in 1948, is the development arm of the Manitoba government in achieving its goal of planned improvement in the provincial economy through industrial development. The key objective of the Department is to attract and establish employment-generating activities and enterprises throughout the province, particularly in rural areas. To do this, it has established various branches and agencies, using an organizational concept that provides industry specialization combined with comprehensive program support.

The Trade and Industry Group consists of four branches with specific commodity interests: Food and Drug, Machinery and Equipment, Industrial Materials and Construction, and Consumer Products; and a fifth, the Trade Development Branch which promotes the export of all commodities. Each of the commodity branches is charged with the responsibility of fostering economic growth in its sector, through expansion of existing firms and attraction of new investment. Each studies trends in its sector, identifies business opportunities, and assists firms through market research, business development and casework.

The Programs and Productivity Group has five branches directly concerned with the implementation of programs in the areas of science and technology, design improvement, transportation and distribution systems, productivity and management development and regional planning and development. Some 60 professionals plan and carry out all programs, consulting and engineering services and research activities. In addition, the Department works closely with other agencies on matters affecting Manitoba's economic development. The following associated agencies are special-purpose bodies of private citizens supported by Department staff.

Through the offices of the Trade Development Branch the Manitoba Export Corporation assists Manitoba firms in developing export sales. It works closely with each industry branch and is empowered to appoint agents abroad and to handle exports for Manitoba manufacturers. Services include extensive practical advice on pricing, documentation, export procedures and tariffs, the organization of trade fair participation, incoming and outgoing missions, and the export of professional services. The Corporation can assume all duties of an export department for Manitoba companies. The Manitoba Design Institute promotes and encourages the application of industrial design principles in Manitoba companies through a series of seminars, workshops, product evaluation sessions, packaging clinics and direct assistance.

The Manitoba Research Council serves as a focal point to encourage and co-ordinate technical undertakings in the province. It encourages co-operation between scientists and engineers in government, universities and community colleges, and industry to meet the special needs of the province arising from location, climate and resources. Several programs of innovation assistance have been devised by the Council, including an Industrial Enterprise Fellowships program to encourage research teams to use their skills to foster the creation of industrial enterprises. Other programs involve sponsoring, in industry or educational institutions, of research projects of potential economic benefit to the province. Four advisory committees of council have been commissioned to help develop centres of excellence in research in specific subject areas. A technology transfer program is available to industry, including assistance with licensing arrangements. (See also Chapter 9, Section 9.3.5.)

The Manitoba Development Corporation is a Crown corporation established in 1958 to encourage balanced development of industry in the province. The Corporation provides financial or other assistance to new and existing industrial enterprises and to community development corporations as well as technical and business advice and guidance to persons and organizations receiving financial assistance and, on request, financial consulting services to other industrial enterprises; promotes diversification of business activity and improvement of existing industry; helps develop export markets for Manitoba products; and encourages the expansion of small- to medium-sized enterprises in Manitoba. The Corporation considers

applications for requirements of essential service industries outside Winnipeg. Loans are generally extended when financing is not otherwise available on reasonable terms and conditions, and provided the owner has a reasonable investment in the business.

The Communities Economic Development Fund was established in July 1971 to further the economic development of the remote and isolated communities of the province with particular emphasis on economically disadvantaged persons. Assistance usually is in the form of term loans to finance existing business enterprises and to establish new ones. Much of the assistance directed by the Fund to northern Manitoba is related to the development of business enterprises by and for people of native ancestry and loans may be made to individuals, partnerships, corporate entities, community councils and to Indian bands.

Manitoba Regional Development Corporations are non-profit organizations set up in 1964 to undertake promotion in a wide sphere of regional interests. They were conceived as a response to some of the challenges facing the rural areas of the province — population out-migration, a slow economic growth rate, and the need for action on a regional basis. Through its Regional Development Branch, the Department of Industry and Commerce has therefore encouraged the formation of regional development corporations in Manitoba with the province contributing to their operating costs. Over the past nine years, seven corporations have been established covering all of Manitoba outside of the city of Winnipeg.

Manitoba offers a number of programs to assist Manitoba companies engaged in production/processing, distribution or specialized construction. The Feasibility Studies Incentive Program assists companies in commissioning the necessary studies to develop plans for establishing or expanding manufacturing facilities in Manitoba, and in making application to obtain grant assistance from the federal Department of Regional Economic Expansion. The Research and Development Assistance Program enables eligible Manitoba companies to develop innovative products or processes or methods for utilization of the natural resources of the province and allows educational institutions to undertake research and development of significant and direct economic benefit. The Productivity Improvement Program provides productivity audit analyses of individual firms and industry groups by specialists who identify problem areas, obstacles to growth and opportunities for improvement in the marketing, production, technology, manpower, organizational effectiveness and financial areas of the firm, and make recommendations suited to the needs and capabilities of the firm, including a blueprint for action. The Manpower Development Assistance Program assists Manitoba companies in analyzing productivity and designing personnel training programs to meet specific company requirements. The Design Improvement Assistance Program makes funds available to assist companies in improving the design and quality of their products. The Manitoba Export Assistance Program gives financial support to Manitoba manufacturers who wish to sell goods or services in markets outside the province. The program provides assistance by exhibiting products at trade fairs, bringing potential buyers to Manitoba and organizing sales missions, and by promoting the export of professional services.

The Manitoba Airport Assistance Program provides grants and loans to municipal airport commissions in southern Manitoba for the development, improvement and maintenance of airports, licensed for night flying by the Ministry of Transport.

Saskatchewan. The primary objectives of the recently reorganized Department of Industry and Commerce are to stimulate the growth of the Saskatchewan economy and to broaden and diversify the economic base of the province, thereby helping to increase personal income and creating job opportunities for the labour force. The activities and programs of the Department are carried out through its branch organization.

The main functions of the Industry Development Branch are to: encourage the establishment of new manufacturing, processing, distribution and warehouse facilities, resource industries and industrial service operations; assist existing firms to expand and diversify their manufacturing, service and distribution facilities; locate and evaluate development opportunities in manufacturing, processing and resource development, and in the service and warehousing sectors; and compile, publish and distribute information on all phases of Saskatchewan's economic development and potential.

The objective of the Business Assistance Branch is to revitalize and support existing business enterprises in the province by providing counselling and consulting expertise in the fields of accounting, merchandising, transportation and marketing. To make these services

accessible to business firms throughout the province, branch representatives will be located at six centres outside Regina.

The Trade Development Branch is primarily involved in the promotion of trade in Saskatchewan products in regional, national and international markets, particularly in the US, Europe and the Pacific Rim. The prime contact points for this program are the office of the Agent-General in London, England, and a soon-to-be-established trade office in the Pacific Rim area.

The Tourist Development Branch undertakes activities to assist the Saskatchewan tourist industry to further its development. These activities include: carrying out a marketing program to motivate travel to and within Saskatchewan; providing advice and information, both printed and oral, to persons wishing to travel in the province; and assisting, through counselling, advice and grants, in the development of tourist plant and tourist attractions.

The new Research and Development Branch has as its main responsibility the collection and dissemination of statistical data, and the preparation of, or contracting for, economic feasibility studies, in order to uncover what imports and new products might be produced in Saskatchewan, and what primary products can be further refined or processed in the province.

Operation Recycle is a special project initiated to administer the collection of abandoned or scrap vehicles for shredding into acceptable steel furnace feed. It is estimated that approximately 100,000 vehicles will be collected over a three-year period and other recycling projects are under active consideration.

The Industry Incentives Act encourages the establishment, expansion and modernization of industry in certain areas of the province. The program provides assistance in the form of forgivable loans to new or expanding manufacturing establishments. These loans are interest-free and are made for a period of six years over which the amount of the loan is forgiven. The Industry and Commerce Development Act authorizes the Department to: make grants to local governments or civic groups for the construction of major tourist facilities or for the promotion of major events and attractions; undertake, either for its own use or on a shared-cost basis with business enterprises, feasibility studies and research to identify new business opportunities; provide, either through department representatives or outside consultants, counselling and advice on all forms of business problems; and make available financial assistance to a community-based group to continue the operation of a business establishment threatened by closure which would seriously disrupt the community in which it is located.

The province also provides financial assistance to business enterprises through the Saskatchewan Economic Development Corporation (SEDCO), a Crown corporation. SEDCO was originally established in 1963 to provide loans for the establishment or expansion of manufacturing enterprises. Since August 1972, its terms of reference have been significantly broadened to permit the provision of financial assistance to virtually all types of businesses. In addition to industrial enterprises, SEDCO loans may now be made to retail, wholesale and service businesses. SEDCO assistance can take many forms, the most common of which is a first mortgage loan over a medium term. Security for such loans consists of specific pledges of land, buildings and/or equipment, and the support of the individuals involved in the business is normally pledged as well. Repayment terms for such loans are designed to suit the income pattern of the enterprise, and may include such features as step-payments, seasonal payments or similar arrangements.

Loans can be granted for terms varying from a few months to 20 years and in amounts from a few thousand to many millions of dollars. The term is determined by the estimated life of security pledged and by the earnings of the business. Equipment based loans would be for five to eight years, while building and equipment loans might be eight to 12 years, and real estate alone as security would warrant a loan of up to 20 years. Working capital loans would range from one month to two years.

In all cases, the Corporation expects that the owners of the borrowing company will have a reasonable equity contribution in the enterprise. In certain instances, the Corporation may consider taking an equity investment in its own right if required to maintain a reasonable balance between debt and equity. The Corporation also has industrial sites and buildings which it is prepared to make available to eligible enterprises. Lease, lease-purchase or outright sale of such properties can be considered and, in certain circumstances, the Corporation will consider constructing a facility for the subsequent sale or lease to a prospective client.

Alberta. The province assists industry through the facilities of the Alberta Opportunity Company (AOC), a Crown agency created by the Alberta Commercial Fund Act on July 1, 1972. It succeeded the Alberta Commercial Corporation and the Alberta Industrial Incentives Board.

The objective of AOC is the promotion of economic growth by stimulating the establishment of new businesses and aiding in the expansion of existing enterprises. In pursuing this objective AOC gives priority to Albertans and Alberta-owned enterprises, small businesses, centres of small population, job-creating projects, research and development projects, promotion of marketing and export potential, enhancement of tourist potential, provision of employment and business experience for Alberta students, encouragement of local development groups and promotion of pollution control projects.

In order to qualify for assistance, a business may be a proprietorship, partnership, co-operative, or corporate body, must be a business operating for gain or profit, must be located or to be located in Alberta, must provide assurance that any assistance provided will be utilized exclusively within Alberta, and must be of a type considered by the Company to be eligible within the terms of the Act and its Regulations. Eligible types of business include: manufacturing, processing and assembly operations, service industries, commercial wholesale and retail trade, recreational facilities, tourist establishments, local development organizations, student business enterprises, and new industries of any kind which are unique and valuable additions to the province. The program is not designed to apply to finance companies, suppliers of residential accommodation other than tourist facilities, public utilities including power generation and distribution, resource-based industries such as mining and quarrying, oil and gas production, logging, farming and ranching.

A number of considerations enter into the decision as to whether or not assistance will be granted: the contribution the project would make to the economy, the local community and the province as a whole; economic viability of the proposal considering capabilities of management, the business environment, adequacy of over-all financing and technical and ecological considerations; proof that the financial assistance requested is not obtainable from other conventional sources on reasonable terms and conditions; and the availability of security to provide reasonable protection. The purposes for which assistance may be provided include: establishment of new businesses, acquisition of fixed assets — land, buildings and equipment, expansion of existing facilities, strengthening working capital, financing raw material or finished inventories for manufacturers, research and development projects.

Financial assistance is made available on a direct basis or by guarantee in various forms: Capital Loans up to 80% (maximum \$500,000) of approved capital costs; Working Capital Loans (maximum \$500,000); Inventory Financing for manufacturers (maximum \$500,000) for the stockpiling of either the raw materials used in the manufacturing process or finished products resulting from that process, in actual operation AOC will purchase the inventory from the manufacturer under a buy/sell agreement at established prices to a level of 80% of "laid-in" cost or wholesale price, as the case may be; Research and Development Loans up to 50% (maximum \$10,000) of the total cost of an approved project undertaken by a commercial enterprise. Such projects are restricted to applied research and development programs which contribute to improvements in one or more of the following areas: technological advances to products or development of new products; technological advances to production facilities; adoption of improved management techniques; and development of new markets.

Business management counselling services may be provided without charge by AOC professional consultants and include management advice and guidance on financial, technical and marketing matters for small- and intermediate-size Alberta businesses which are not in a financial position to obtain this type of assistance elsewhere. Services under the program are provided through the Company's head office in Edmonton and its southern area office in Calgary. Financing programs are individually dealt with by an experienced staff of professional personnel. Applications for assistance call for suitable back-up material, such as financial statements, etc., which is studied and broadly assessed. Applications are considered for approval by the Board of Directors and, normally, funds are available in four to six weeks.

British Columbia. The functions of the Department of Industrial Development, Trade and Commerce are to encourage industry, to expand foreign trade, to investigate matters of economic importance, to collect and publish statistical information and to assist in regional industrial development. In these fields, the Department is organized to assist existing activities

and encourage new enterprises by placing its facilities at their disposal, and to co-operate in all problems incidental to establishment. Direct financial assistance is not provided for manufacturers except for the provision of bounties for the production of blister copper or refined copper and a bounty for pig iron of British Columbia origin used for steel-making purposes in the province.

The chief means employed by the British Columbia government to promote industrial development are to: develop the basic provincial infrastructure, including the extension of rail services to northern centres by the provincially owned British Columbia Railway and develop electric power facilities by the British Columbia Hydro and Power Authority; provide economic data and analyses relating to markets, production wage costs, etc. (a function of the Economics and Statistics Branch of the Department); and assist in locating plant sites. The Department maintains an industrial and trade office in London, England.

17.4 Merchandising and service industries

Data on merchandising and service activities are derived principally from a periodic census (or full-coverage survey) of the businesses engaged in such activities. The first census was taken in 1931, followed by similar censuses in 1941, 1951 and 1961. The reports for 1961, which provided a wider range of data than any previous census, contained information on sales, inventory and credit; gross margins and operating expenses; small geographic area data; and, for "establishments" only, an analysis of sales by commodities. For census purposes, a location is defined as "a recognizable place of business in which the principal activity is the display and sale of goods or services to the general public for personal or household consumption". In other words, the location series provides aggregate data on the physical locations in which retailing or service activities actually take place. The establishment, on the other hand, is "the smallest unit which is a separate operating entity capable of reporting those elements of input and output necessary to the calculation of gross margin, as well as employment, wages and salaries". The location is not dependent on the system of accounting; the establishment is.

The 1961 Census marked the end of the decennial census program. In 1966, the censuses of merchandising and service establishments became part of a quinquennial series in order to provide more frequent survey benchmarks and to enable publication of more up-to-date statistics than was previously possible. The 1972 *Canada Year Book* pp. 979-986 lists the reports produced as a result of the 1966 Census of retail and service trades and provides summary data from a special study based on the 1966 Census of wholesale trade. In the 1971 Census, the data requirements – because of greatly increased demands for information from the public and private sectors – are considerably more detailed than at any time in the past; results of this census will begin to be available early in 1974.

The service trades embrace a wide spectrum of activities engaged in by professional, business and personal service establishments. Included are the amusement and recreation services, which include regular and drive-in movie theatres, bowling alleys, health clubs, golf courses, race tracks and other sports activities, and the fast-growing accommodation and food service fields, comprising hotels, motels, tourist facilities, restaurants and drive-in "fast food" outlets. The degree of interest being shown in the services field is further indicated by the number of trades which were surveyed for the first time in the 1971 Census. These include, in the amusement and recreation services group, marinas, ski-facility operations, driving ranges and miniature golf courses; and, in the business services group, computer services, media representatives, architects, professional engineers and other engineering and scientific services, lawyers and notaries, and management and business consultants. A number of these "new" trades (computer services, engineering services, etc.) will be the subject of separate studies to be undertaken during the next three years. Services provided by doctors, dentists, nurses, hospitals and educational institutions remain outside the scope of the Census of Merchandising and Services.

Each census, as it is completed, forms a new base for the various intercensal (monthly, quarterly and annual) surveys of retail, wholesale and service trades: some are sample surveys and others are carried out on a full-coverage basis. Section 17.4.2 contains current intercensal information obtained as a result of these surveys, relative not only to the distributive trades but to other statistical series (i.e. consumer credit) as well. It should be noted that all of these data are on the 1966 base.

17.4.1 1971 Census of Merchandising and Service Businesses

The 1971 Census of Merchandising and Service Businesses represents the final phase of the 1971 Census of Canada, the major part of which took place in June 1971. Unlike the first three phases (population, housing and agriculture) the business census was conducted early in 1972 as it measures business activities over a complete financial year. Results will be available early in 1974. One of the purposes of the census is to provide government agencies and private users with a detailed picture of the situation at a fixed point in time in the distributive and service trades.

17.4.1.1 Government sector

The Census of Merchandising satisfies the requirements of an integrated System of National Accounts (SNA) in relation to the retail, wholesale and service industries. Following is a set of definitions showing how the answers obtained relate to specific requirements of the SNA. (For a more detailed discussion of the SNA see Chapter 21.)

Personal expenditure on consumer goods and services. This figure accounts for more than 60% of gross national expenditure and is composed primarily of data collected on the retail and service industries. Personal disposable income (personal income less direct taxes) less personal expenditure on goods and services equals personal net saving.

“Make” matrix shows the distribution by commodity of the output of each of the industries and the distribution by industry of the output of each of the commodities. In other words this matrix shows the market shares of commodity production by industries.

Value of physical change in inventories. The net change during the year of business holdings of inventories must be included in the gross national expenditure in order to allow for that portion of current production (purchases) which has not yet been sold (positive change in inventories), or to eliminate that portion of previous years' production (purchases) which is included in sales of the current year (negative change in inventories). The change in the value of inventories relevant to gross national expenditure should reflect a change in physical volume valued at the average market prices of the period. This change is referred to as the value of the physical change in inventories.

Inventory valuation adjustment. Since inventories often contain goods produced (purchased) in previous years, an adjustment of book values is necessary to allow for the valuation of the carry-over portion. To make this adjustment, it is necessary to estimate the commodity content of inventory holdings, the normal turnover period for the industry, and the accounting methods used by the firms in arriving at book values. The book value of inventories is deflated to remove the effect of price changes and the derived “physical” change is then valued at average prices of the current period to obtain the value of the physical change. The inventory valuation adjustment is the difference between the value of the physical change and the change in book value. This adjustment is made to the National Income to remove, from corporation profits and the net income of unincorporated businesses, any inventory gains or losses arising from the effect of price changes on the holding of inventories.

Census value added is a concept which evolved from the Census of Manufactures as a measure of output applied to an industry. It is obtained by deducting from the value of gross output in a period, the value of materials used, the cost of light, heat and power, the cost of goods purchased for resale and some service expenses. An approximate equivalent in the retail, wholesale and service industries is “mark-up on sales” which is the difference between sales and the purchase price of goods sold in a period.

“Absorption” matrix shows distribution by industry of the input of each of the commodities and, in each column, the distribution by commodity of the input of each of the industries. In other words this matrix shows the distribution by industry of the materials and services and primary factors of production such as depreciation, salaries and wages, employee benefits, etc. used by each industry.

The “make” and “absorption” matrices, together with information on net final demands, provide the basic data for input-output tables.

Value added. The value added of industries at true factor values is equal to the true factor value of their gross output less the true factor value of their intermediate inputs. It is a further refinement of the “census value added” concept in that the intermediate inputs or the costs of

goods purchased from other industries are known in addition to a proper measurement of producers' value (output) and purchasers' value (input). (See gross domestic product at factor cost for equivalent.)

Gross domestic product at market prices is defined as gross domestic product at factor cost plus an adjustment for the residual error of estimate and indirect taxes less subsidies.

Gross domestic product at factor cost. This can be calculated in three ways from the data collected by the 1971 Census of Merchandising and Service Businesses, as follows. (a) The measurement of gross domestic product (GDP) at factor cost can be obtained via the "census value added" approach, since such costs as advertising, insurance, repairs, communications, etc., purchased from other businesses can be deducted from the census value added of each industry (the latter already excludes major indirect taxes such as sales and excise taxes). The residual would then consist — after adjustment for other indirect taxes and subsidies — of factor incomes and capital consumption allowances (primary inputs) and would represent GDP originating in each industry. (b) The sum of the incomes accruing from production and depreciation; these include salaries and wages, employee benefits (supplementary labour income), net profit or income (before taxes) and depreciation (gross national income). (c) Gross domestic product is measured at constant prices (called real domestic product) as well as current prices. Real domestic product is obtained by deducting intermediate inputs at constant prices from gross outputs at constant prices. These data on real domestic product are also used to calculate labour productivity measures.

Personal income is broadly defined as the measurement of all income received by Canadian residents such as: factor incomes of persons; transfer payments received by persons such as family allowances and unemployment insurance benefits; and charitable donations which are treated as a current transfer from business to persons.

Productivity of labour. A measurement of the productivity of labour may be calculated by adjusting gross domestic product at factor cost through the use of the double-deflation technique to provide deflated real output. The result divided by the total man-hours employed equals a measure of the productivity of labour.

A measure of output per unit of labour input is obtained by matching real domestic product and corresponding labour inputs expressed in terms of man-hours or persons employed.

Sectoring. The allocation of data by form of organization provides information on the institutional arrangement of the Canadian economy in relation to the sectors. A full set of National Accounts must distinguish among various sectors of the economy and must account for assorted types of transactions undertaken by and/or between classes of transactors. Four broadly distinguishable classes of transactors can be identified whose economic motivations and behaviour are relatively homogeneous within each class, but essentially quite different from one class to the next. These are: persons, governments, businesses, and non-residents (i.e., the rest of the world).

Commodities in the measurement of personal expenditure on consumer goods and services. Personal expenditures on goods and services by type are obtained by aggregating the sales of various kinds of commodities, including both goods and services. Commodity sales estimates are based on commodity data derived from the Census of Merchandising and Service Businesses. These commodities or commodity groupings are further classified into durable, semi-durable and non-durable goods and the service component.

Weighting patterns through commodities. Weighting patterns are developed for the construction of appropriate indices, using retail commodity sales as the input at the finest level of detail.

Industrial distribution by industry of origin. An industry is defined as a group of operating units engaged in the same or a similar kind of economic activity. By classifying each operating unit to a particular industry, it becomes possible to illustrate the contribution of each industry to the input or output being measured.

17.4.1.2 Private sector

In addition to the detailed information obtained at the establishment or reporting unit level (for the provinces and Canada), a separate questionnaire obtained supplementary data

on sales, cost of sales, salaries and wages, employment and inventories for each business location and ancillary unit. This implies the tabulation of these data by three- and four-digit SIC classifications and kinds of business at the finest geographical level within the secrecy provisions of the Statistics Act.

Such data can assist businessmen and others in making better decisions; help in formulating policies to determine store or business location; enable the user to calculate share-of-market ratios; and provide a barometer of the sophisticated demands of today's knowledgeable consumers through an analysis of retail sales by commodity grouping.

The kinds of information which will be available as a result of the 1971 Census will be of interest to a wide variety of users — particularly (but not limited to) those already operating within the retail, wholesale, service and manufacturing industries. For example, the data will be widely used by market research houses and advertising agencies, as well as by educational institutions, academics and students, to determine market penetration and growth rates, and in basic research on economic activities at the local, provincial and national levels.

In addition, the statistical information will be of use to trade and business associations to analyze sales, inventory and other measurements for their members. Municipal planning boards and real estate developers will be able to use these data as factors in urban redevelopment and shopping centre planning. Franchisers can obtain detailed information on the penetration and viability of franchised businesses in the highly competitive retail and service sectors.

Merchandising and services statistics are also used in the communications field. Newspapers, periodicals and magazines include Statistics Canada data in their various reports on business in Canada and the United States. Information on the retail, wholesale and service trades, developed in the course of the 1971 Census, will form a major component of such reports.

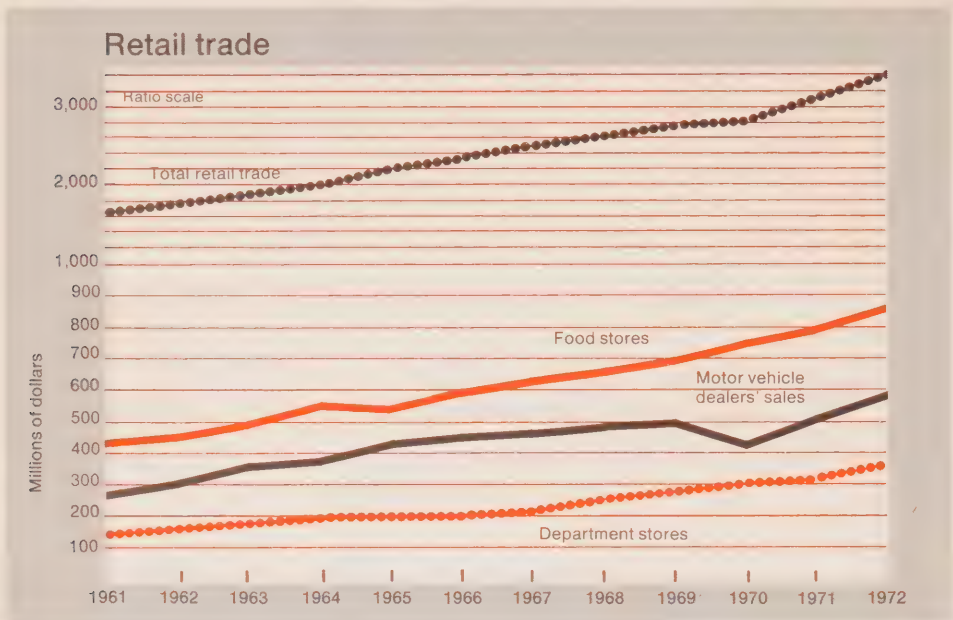
17.4.2 Intercensal surveys

17.4.2.1 Retail trade

The trend of retail trade is one of the most accurate barometers of the economic health and well-being of the nation. In 1972, retailers absorbed 48.4% of personal disposable income available to Canadians and accounted for 51.7% of total personal expenditure on consumer goods and services. The value of retail sales, estimated from intercensal sample surveys and revised every five years to a new census base increased by 49.5% during the period 1966-72. Details of intercensal revisions may be found in *Retail trade, 1961-66* (Catalogue No. 63-517) and in *Retail trade, revisions to 1966-70 postcensal estimates* (Catalogue No. 63-519). Between 1971 and 1972, estimated sales rose by 10.7%, compared to a 9.3% increase between 1970 and 1971. This reflected not only the effect of inflationary trends but also the further strengthening of the economy during 1972. The current retail trade series, as shown in Table 17.20, classifies retail trade into 18 kinds of business and provides provincial totals over the 1966-72 period. Additional details on retail trade may be found in *Retail trade*, Catalogue No. 63-005 (monthly).

Chain and independent stores. Within the framework of retail trade, chains and independent retailers compete to achieve or retain a viable share of the total market. (A retail chain is defined by Statistics Canada as "an organization operating four or more retail stores in the same kind of business under the same legal ownership". A concession located in a department store is not considered to be a store location for the purpose of this definition.) In some kinds of business, such as motor vehicle dealers, service stations and garages, food stores other than grocery and combination stores, fuel dealers, and men's clothing stores, independent merchants have maintained a dominant position; in others, such as department stores, variety stores and general merchandise stores, chains account for the largest proportion of sales. In recent years, changes in market share have been most pronounced among women's clothing stores, grocery and combination stores, family clothing stores, jewellery stores and shoe stores. The constantly shifting balance between chain and independent stores is illustrated in Tables 17.21 and 17.22.

Department stores. In 1972, department stores accounted for a higher proportion of total sales than most other kinds of retail business — exceeded only by grocery and combination stores and motor vehicle dealers. Their sales of \$3,687.9 million represented 10.9% of total retail



trade and 14.2% of the business done by competing firms (all trades other than motor vehicle dealers, fuel dealers and parts of the "all other stores" classification). Department store sales in 1972 were 86.8% higher than in 1966, the largest increase among the 18 specified kinds of business (Table 17.20). However, growth among the various departments within department stores has not been consistent. Table 17.23 shows that the highest rates of increase have occurred in men's clothing; women's and misses' sportswear; photographic equipment and supplies; gasoline, oil, auto accessories, repairs and supplies; and sporting goods and luggage.

New motor vehicle sales. The largest homogeneous group of commodities sold within the confines of retail outlets is embodied in the classification "new motor vehicles". In the only current survey of retail trade carried on at the commodity level (all others are based on "kind of business"), new motor vehicles are taken to include private passenger cars and taxis, trucks, buses and other commercial vehicles sold at retail. As shown in Table 17.24, sales of new motor vehicles in 1972 reached a new high of \$4,315.4 million, based on the actual cost to purchasers (prior to 1967, the data were based on manufacturers' suggested list prices). The increase in new motor vehicle sales (21.4% over the 1971 level) is believed to have been primarily the result of rising economic conditions which prevailed during this period and which heavily influenced the sale of high-priced consumer goods.

In recent years, the sales of overseas-manufactured vehicles — both passenger cars and trucks — have been increasing at a faster rate than those of Canadian and United States manufacture. In 1972, however, following five consecutive years of growth in the market share of new overseas vehicles (based on number of units sold), the imports suffered a minor reversal. Sales of Canadian- and US-manufactured passenger cars rose at a faster rate between 1971 and 1972 than import models, resulting in a slight drop in total market share (from 21.4% to 20.8%) for all overseas-manufactured vehicles. Table 17.25 lists new motor vehicle sales, by type of vehicle and by source of origin, for 1971 and 1972. It will be noted that one out of every five new vehicles sold during 1972 was an overseas-built model, and that nearly one sixth of Canadian sales dollars went toward the purchase of such models.

Non-store retailing. Consumer goods, in addition to being sold in retail stores, often reach the household user through other more direct channels of distribution — commonly described as "direct selling". These channels are characterized by the fact that the commodities handled bypass the retail outlet completely in moving from manufacturer to distributor to household

consumer. Statistics Canada periodically carries out surveys of two distinct forms of direct selling — merchandise sales of vending machine operators, and of manufacturers and distributors specializing in direct-sales methods.

The survey of vending machine operators is designed to measure the value of sales made through automatic vending machines owned or operated by vending machine firms, including soft drink bottlers engaged in vending activities on a regular year-round basis. In 1971, such sales reached a new high of \$162.2 million, 3.5% above the 1970 total of \$156.8 million (Table 17.26). The 1971 sales were recorded by 697 vending machine operators through 101,550 automatic merchandising machines, including 1,476 microwave and infrared ovens and 2,109 coin and bill changers.

Although vending machines can be used to distribute many types of commodities, the largest proportion of sales has been accounted for consistently by three main lines — tobacco products, hot drinks, and cold drinks vended in bottles, cans, cartons and disposable cups. In 1971, sales in these three product areas amounted to \$132.4 million, an increase of 5.7% over the 1970 total. However, the over-all importance of tobacco products, hot drinks and cold drinks is declining. In 1960, these commodities accounted for 87.4% of all merchandise sold in vending machines; by 1971, this proportion had fallen to 81.6%. Among commodities sold in vending machines, tobacco products showed the largest increase in market share from 1970 to 1971 (Table 17.27).

Direct selling of manufacturers and specialist agencies. The first survey of direct selling, which was carried out in conjunction with the 1966 Census of Merchandising and Services, covered all manufacturing establishments which produce consumer goods as well as selected agencies specializing in direct sales methods. The data published since 1966 were estimates based on the results of a sample of businesses in these two areas. A new survey for the year 1971 also in conjunction with the census has now been completed, and the data from this survey have been used to revise the intercensal estimates from 1966 to 1970 (see previous issues of the *Canada Year Book*).

Table 17.28 shows that, over the five-year period 1967-71, direct sales by manufacturers and specialist agencies increased by nearly 12%, rising from \$719.5 million to \$805.0 million. Among the industries surveyed in 1971, the largest share of sales was accounted for by manufacturers and distributors of dairy products (20.2%); newspapers and magazines (15.6%); cosmetics (9.7%); and books (6.7%). Businesses in these four industries were responsible for more than half of all direct sales reported. The greatest growth, however, occurred primarily in the following areas: fur goods (+109.1%); magazines (+81.3%); meat, fish and poultry (+72.7%); and sail boats and pleasure craft (+49.2%).

In the 1971 direct-selling survey, information was also obtained (for the first time) on the provincial distribution of such sales. Not unexpectedly, the results were somewhat similar to the provincial distribution of "ordinary" retail sales (which are shown in brackets beside the direct-sales figures), as follows: Atlantic Provinces 6.4% (8.2%); Quebec 29.0% (25.1%); Ontario 40.2% (38.8%); Prairie Provinces 14.8% (16.0%); British Columbia 9.6% (11.9%).

Table 17.29 shows the percentage distribution of the \$805.0 million direct sales during 1971, for selected commodities, by method of distribution. Almost two thirds of this amount (\$524.7 million) was purchased at home, from home-delivery tradesmen or door-to-door canvassers: \$203.0 million for bread, milk and other dairy products, \$110.0 million for newspapers, \$75.7 million for cosmetics and costume jewellery, \$33.7 million for vacuum cleaners and other household electrical appliances, \$25.5 million for dinnerware, kitchenware and utensils, \$22.8 million for brushes, brooms and household cleaners, \$17.5 million for books, and \$36.5 million for sundry other items. Mail-order purchases by household consumers accounted for \$124.2 million, comprising chiefly books (\$35.9 million), newspaper and magazine subscriptions (\$26.1 million), phonograph records (\$14.0 million), and a wide range of electronic entertainment equipment and other leisure-time appliances offered to the credit-card holders of gasoline oil companies (\$20.0 million). Purchases from non-retail stores, e.g. sales offices or showrooms of manufacturing companies and certain primary producers, amounted to \$151.4 million and included such items as furniture repair and re-upholstery (\$32.5 million), frozen food plans (\$18.1 million), greenhouse flowers and nursery seeds (\$16.4 million), and household electrical appliances (\$12.8 million). Consumers also made \$4.7 million purchases during 1971 of meat, fish and poultry from temporary roadside market stalls, newspapers from honour boxes, and sail boats, etc., from exhibitions and shows.

Campus book stores. Since 1966, retail trade statistics have been collected from book stores located on the campuses of universities and other post-secondary educational institutions by a special supplementary annual survey. Owing to their location, their generally special method of operation and the highly seasonal nature of their business, these stores are not included in the Census of Merchandising and Service Businesses. Statistics of these book stores are required for consolidation of data on retail merchandising. Table 17.30 provides summary information on the sales of campus book stores for the last four academic years. Additional data on employment and payrolls are published in the Statistics Canada report *Campus book stores* (Catalogue No. 63-219).

17.4.2.2 Wholesale trade

Wholesalers are primarily engaged in buying merchandise for resale to retailers; to industrial, commercial, institutional and professional users; to other wholesalers; or in acting as agents in connection with such transactions.

Mixed-activity businesses (such as firms engaged both in wholesaling and retailing, contracting, service trades, manufacturing, etc.) are considered to be primarily in wholesale trade whenever they derive a larger gross margin from wholesale than from any other activity. (The gross margin is the difference between the total sales and the cost of goods sold. As the 1966 questionnaire did not seek information on the cost of goods sold, the 1961 gross margins were used for the classification of establishments.)

The delineation between wholesale and retail activity is based on the "class of buyer" criterion. If a larger share of the gross margin is obtained from sales to retailers, industrial, commercial, institutional or professional users than from sales to households or private individuals for personal use (including sales to farmers for non-farm use), the business is classified to wholesale trade. Certain businesses are considered to be in wholesale trade regardless of how their sales are broken down by the class of customer. These businesses deal in the following commodities: office furniture, lumber and building materials, farm supplies and all kinds of machinery and equipment.

Wholesale statistics measure the total volume of Canadian wholesale trade; this is the aggregate business conducted by all wholesalers operating in Canada, whether Canadian or foreign and whether sales are domestic or foreign. The total volume of trade measured by statistics is not identical with the value of goods passing through the wholesale sector of the economy: at times wholesale firms sell to each other and thus the value of the same merchandise may be recorded twice or more in the total volume of wholesale trade. No attempt is made to eliminate such duplications.

The most important part of wholesaling activity in Canada is that which is carried out by wholesale merchants. These are establishments primarily engaged in buying and selling goods on their own account. This classification includes such diverse business entities as: export and/or import merchants, cash and carry wholesalers, drop shippers or desk jobbers, mail-order wholesalers, truck distributors, rack jobbers, and voluntary group wholesalers.

The sales of wholesale merchants, as measured by a monthly reporting panel of such establishments, have been increasing consistently for several years. In 1972, they reached a new high of \$28.167 million, some 13% above the \$24.896 million recorded in 1971. Consumer goods wholesalers experienced an 11.2% increase in value of sales, compared with a 15.2% increase for wholesalers of industrial goods. The best results were recorded by wholesalers of grain, farm machinery, and construction materials and supplies; the poorest by wholesalers of footwear and coal and coke.

Table 17.31 shows the annual sales of wholesale merchants in 24 kind-of-business groupings and two residual categories during the period 1968-72. These data reflect changes in the wholesale trade series resulting from their adjustment to the 1966 Census benchmark. Further information is given in *Wholesale trade, 1966 establishments* (Catalogue No. 97-627) and *Wholesale trade, 1961-1971* (Catalogue No. 63-521).

In addition to the monthly survey of wholesale merchants, two annual surveys of wholesale trade are undertaken by Statistics Canada at the commodity level — farm implements and equipment, and construction machinery and equipment. (It should be noted that estimates of farm implement and equipment sales are also published monthly, in aggregate form, based on the data reported by a panel of major-line companies.) The results of the survey of construction machinery and equipment sales for the year 1970 were reported in the *1972 Canada Year Book*, pp. 999-1000. Later information was not available in time for this edition.

Sales of farm implements and equipment (valued at wholesale prices) rose dramatically in 1972, reaching their highest level in five years. The sales total of \$418.6 million was 28.3% higher than the comparable 1971 figure of \$326.2 million. The increase was general throughout Canada, although the Atlantic Provinces increase was considerably smaller than elsewhere. The largest percentage gains occurred in Saskatchewan, British Columbia and Ontario — 38.9, 35.4 and 26.9% respectively. Sales of repair parts, not included in Table 17.32, were \$88.7 million, 15.4% higher than the \$76.8 million sold in the previous year.

17.4.2.3 Service trades

Hotels. In addition to its annual hotel survey (Catalogue No. 63-204), Statistics Canada also reports semi-annually on the trend of hotel receipts in Canada, based on results obtained from a panel of hotels having 50 or more rooms. Table 17.33 shows that the receipts of such hotels increased by more than 32% during the 1968-72 period. The best results were experienced in Alberta and Quebec and the poorest in Manitoba and Ontario. The greatest rate of increase from 1971 to 1972 was recorded in Saskatchewan, which now appears to have reversed successfully its downward trend in the late 1960s. Other provinces where hotel receipts have risen at more than the national growth-rate during 1971-72 include British Columbia, Manitoba, Newfoundland and Prince Edward Island combined, Quebec and New Brunswick.

Restaurants. Receipts of Canadian restaurants have risen steadily over the past several years, reaching a new high of \$1,386.6 million in 1972 — an increase of more than \$220.0 million (18.9%) since 1968 (Table 17.34). The largest growth in restaurant receipts between 1968 and 1972 was experienced in Newfoundland, New Brunswick and Quebec. Declines were registered in only two provinces: Prince Edward Island (-5.2%) and Saskatchewan (-8.4%). These data include the receipts of traditional restaurants and drive-ins; they do not include such other areas of the food-serving industry as take-out restaurants, caterers, industrial restaurants and refreshment booths and stands.

Motion picture theatres. In 1970, total receipts from all motion picture theatres rose 9.1% from 1969 to an all-time high of \$128.7 million (Table 17.35). At the same time, amusement taxes collected rose 8.3% to \$9.2 million. The receipts of regular motion picture theatres increased at approximately the same rate as drive-in theatres — 9.1% and 8.9%, respectively. The rise of 2.3% in paid admissions for all types of theatres in 1970 reversed a five-year downward trend. Unlike receipts, the rise in number of admissions was considerably more pronounced in regular motion picture theatres (+2.4%) than in drive-ins (+1.6%). Despite lower employment levels in both types of theatres in 1970, salaries and wages rose to a new high of \$30.0 million, and the "average" salary increased 16.5%.

Data on Canadian motion picture production have been omitted, for this year only, from the "Service trades" section. No survey was carried out in 1971. The most recent data are for the year 1970 and appear in the 1972 *Canada Year Book*.

Film exchanges. During 1970, films were distributed by 53 companies through 112 offices located across Canada. Receipts totalled \$66.1 million, up 5.3% from 1969, and 2.3% higher than the previous record established in 1968. The industry paid \$5.3 million in salaries and wages to 737 employees in 1970 as compared to \$5.3 million paid to 846 employees the previous year (Table 17.36). Data for the National Film Board of Canada are not included.

Receipts from the rental of films rose to \$65.6 million in 1970, 6.1% higher than the \$61.8 million recorded in 1969 (Table 17.36). Revenue derived from rentals for theatrical use amounted to \$45.7 million, for television use \$18.8 million, and for other (non-theatrical) use \$1.1 million. In addition, \$53,000 was derived from the sale of advertising and \$500,000 from other sources. New films released for theatrical bookings numbered 948, of which 786 were feature films, 55 cartoons, 60 newsreels and 47 other short subjects. Of the 786 feature films, 53 originated in Canada (as compared to ten in 1969), 291 originated in the United States, 131 in Britain, 113 in Italy, 90 in France, and 108 in all other countries.

Power laundries and dry-cleaning and dyeing plants. In 1970, receipts of both power laundries and dry-cleaning and dyeing plants declined from the previous year for the first time since 1933. Receipts of power laundries declined 3.2% from 1969 to \$107.8 million while dry-cleaning and dyeing plants registered a drop of 7.5% to \$152.3 million. Employment in 1970 was down from 1968 in all categories, and salaries and wages for all firms combined dropped 7.1% from the 1969 level to \$118.8 million. The cost of materials and supplies also declined over the year, falling 13.2% from 1969 to \$23.4 million in 1970 (Table 17.37).

While dry cleaning remained the dominant revenue source for dry-cleaning and dyeing plants, rental services continued to increase, both in absolute terms and in relation to other sources of revenue, for power laundries. The \$55.5 million revenue from rental services reported by power laundries in 1970 represented 51.5% of total revenue as compared to 48.4% in 1969 and 28.0% in 1960.

The decline in revenues of power laundries and dry-cleaning and dyeing plants between 1968 and 1970 was felt in all provinces. The highest losses were recorded in Saskatchewan and New Brunswick — 12.7% and 10.3%, respectively — while Manitoba, with an almost negligible decline of 0.1%, showed the least effect of this change.

Advertising agencies. Billings of advertising agencies rose during 1970 to a new high of \$470.4 million, an increase of 3.1% from 1969. Advertising billings rose to \$462.7 million, up 2.8%, while billings for market surveys, research and other fees jumped 31.2% to \$7.6 million. Although gross revenues rose 5.1% in 1970 to \$82.9 million, net revenue reported by advertising agencies totalled only \$7.7 million, a decline of 18.3% from the record high of \$9.4 million posted in 1969 (Table 17.38).

Table 17.39 provides a breakdown of advertising billings by medium and by kind of service (media billings vs production charges) for 1969. The print and television media jointly accounted for \$367.5 million or 79.4% of total advertising billings, with radio (13.4%) and the other advertising media trailing far behind.

17.4.3 Merchandising inventories

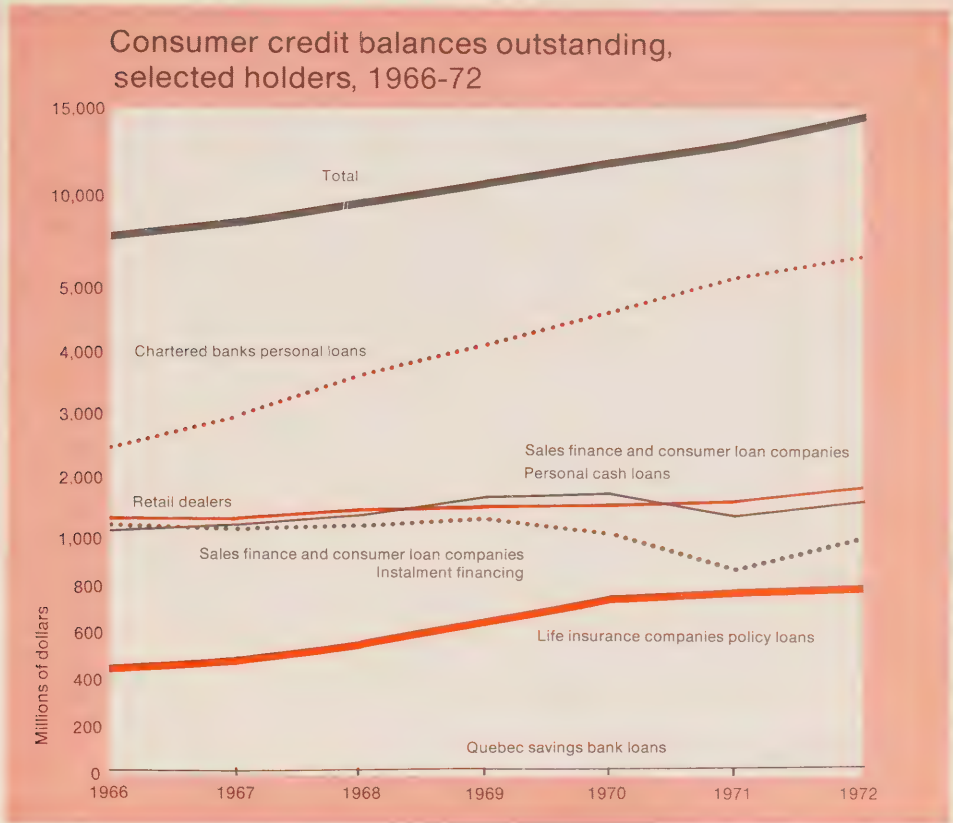
An important function of merchandising is the exercise of control by the merchant over stocks held for resale. Seasonal variability in sales for most kinds of business is reflected in the seasonal differences in inventory holdings of marketable goods. Likewise, the expanding volume of both wholesale and retail sales is mirrored in growing levels of inventory investment. Table 17.40 is a consolidation of statistics on stocks held for resale in the retail and wholesale sectors, showing the quarter-to-quarter movement of stocks for selected categories of trade. Monthly estimates on dollar value of inventory held by wholesalers, department stores and chain stores, together with quarter-to-quarter percentage changes in sample stocks of independent retailers, are now available in a new Statistics Canada publication, *Merchandising inventories* (Catalogue No. 63-014). Stock-sales ratios, derived by dividing the dollar volume of inventories by the dollar volume of sales, are included also.

Changes in merchandising inventories between 1971 and 1972 varied over different kinds of business within the wholesale and retail sectors. In wholesale trade, in both the consumer and industrial goods categories, holdings of marketable stocks increased significantly. Department stores also experienced a strong 12.6% increase in stocks over this period, led by a 16.1% increase in stocks of furniture, TV, radio, and household appliances. In the retail chain store category, a decrease of 5.6% occurred in the grocery and other food group, while all other groups reported increases. In contrast to the other merchandising categories, the value of stocks held by independent retailers at year-end 1972 remained at precisely the same level as three months earlier. The normal seasonal decline in retail inventories following the Christmas sales period was offset by a sudden surge in stocks held by independent motor vehicle dealers during the final quarter of 1972.

17.4.4 Sales financing and consumer credit

Sales financing. A major change affecting the concept of values reported was made in the 1971 survey of sales financing in Canada. From January 1971, all values reported for paper purchases and balances outstanding were changed to a "net" basis, showing only the original amount financed and excluding all unearned income charges. This follows two important changes made in 1970. In January 1970, coverage was extended to include the sales financing done by consumer loan companies and, as well, a transfer was made of passenger cars known to be financed for commercial purposes, from the consumer goods to the commercial vehicles category. The comparability of data in 1970 and 1971 has been seriously affected by these changes.

In order to measure the effect of the last change, a special sample survey of sales finance companies was carried out for the month of December 1970. As a result, a comparison of 1970 and 1971 figures on a "net" basis was made possible. Total "net" balances outstanding of \$1,997 million in 1970 could therefore be seen to drop to \$1,943 million in 1971, a 1.7%



decrease over the year (Table 17.41). Reductions of 9.1% in holdings of passenger car paper and 10.1% in other consumer goods paper were not sufficiently offset by the 6.3% increase in commercial vehicle balances and the 5.5% increase in other commercial finance paper balances. The lowered volume of sales financing for a second consecutive year reflected the changing portfolio of sales finance and consumer loan companies toward greater financing of commercial and industrial goods.

By December 1972, however, the marked decline in consumer goods balances (noted in 1970 and 1971) was significantly reversed. An increased volume of paper purchased in 1972 produced a 16.2% rise in the balances outstanding for consumer goods over year-end 1971. Commercial goods paper also showed a brisk upsurge in volume purchased, raising outstanding balances by 16.4% during this period. The strongest growth in 1972 occurred in the financing of "other commercial goods", which rose by 16.7% in balances outstanding. Passenger car financing, which had been declining during the preceding two years, surged to a 19.3% increase over the 1971 total.

Consumer credit. Although the total volume of credit extended to consumers by retail stores and selected financial institutions has grown progressively over the past 20 years, annual rates of increase have shown a tendency to decline during periods of credit restraint and weakness in buyer demand. During the 1961-69 period, the annual rate of increase in balances outstanding averaged 12.5%. In 1970, however, balances rose by only 5.1% — the smallest gain since 1957 — reflecting not only a reduced rate of credit expansion but also a statistical adjustment that resulted in the transfer of passenger cars used for commercial purposes (paper valued at \$182.3 million) into non-consumer financing. In 1971, advances in total credit balances were again restrained but had recovered somewhat to produce an 8.3% increase over 1970. (The actual rate of increase was 9.6%; the lower published figure resulted from a change in valuation in the

instalment financing of consumer goods, from a gross basis to one which was net of unearned finance charges.) A buoyant economy during 1972 pushed total consumer credit balances to a record level of \$14,870 million by year-end — 17.2% higher than the 1971 figure (Table 17.42).

While total credit volume has been expanding, the composition of consumer credit balances has been undergoing continual change. Chartered banks have been by far the most active financial institutions in this sphere of financing, increasing their share of total consumer credit holdings from 40.0% in 1970, to 45.7% in 1971 and 48.2% in 1972. At the same time, consumer loan and sales finance companies — whose holdings of consumer instalment credit and personal cash loans had declined by 19.9% in 1971 — experienced an 8.1% increase in balances for 1972. Their share of total consumer credit, however, continued to decline, from 24.4% in 1970 to 17.9% in 1972. Credit unions and caisses populaires, on the other hand, extended their share of consumer credit to 13.5% at year-end 1972, increasing their balances outstanding by 18.3% over 1971. During the same period, retail store credit, public utilities' credit and balances held by other credit-card issuers all rose in amounts outstanding, but with no change in their share of total consumer credit balances.

Retail credit. Retail credit is defined as the value of accounts outstanding on the books of Canadian retailers, including department stores and their "captive" acceptance companies, adjusted to exclude non-consumer credit accounts. During 1972, total retail credit outstanding rose by 10.1% — somewhat less than the 10.7% increase in retail sales over the same period (Table 17.43). Department stores, which held a 46.2% share of the retail credit sector by year-end, contributed a 9.1% increase in credit balances during 1972 (while their sales increased by 15.3%). Balances held by furniture, TV, radio and appliance stores rose, for the second consecutive year, to \$186.6 million as the result of a significant increase of 16.6% during 1972. On the whole, however, the proportion of consumer credit accounted for by retail stores continued to fall steadily to 12.0% at the end of 1972 despite vigorous growth in the accounts receivable of fuel dealers, men's clothing stores, grocery stores, and the automotive group.

17.5 Co-operative organizations

Business volume of Canadian co-operatives rose in 1970 for the first time since 1967 with a turnaround in grain exports which had slumped badly in the previous two years and offset gains in most of the other sectors. Gross volume was \$2,179 million for a gain of \$87 million or about 4%. Revenue broken down by the four broad components of co-operative business was: farm product marketings \$1,354.3 million representing a gain of 10%; sales of merchandise and supplies \$748.8 million, an increase of 3%; revenue from services (trucking, cold storage, seed cleaning, etc.) \$59.9 million, a decrease of 10%; and miscellaneous income (rent, interest, dividends, etc.) \$16.2 million, almost unchanged from the previous year.

Business co-operatives (as opposed to such non-commercial co-operatives as community halls and rinks, etc.) are classified by their primary function into four main groups: marketing and purchasing (by far the largest group), service, fishermen's and wholesale. The first three groups are known as "local" co-operatives since they deal directly with individual members; the wholesale co-operatives, as their name indicates, perform wholesaling functions for the locals. Revenues of the wholesale co-operatives are usually presented separately from those of the locals since their sales are mostly a duplication of the locals' sales. Assets of the locals at \$1,240.9 million were down for the year with a drop in the value of grain inventories in the Prairie Provinces nullifying the increases which were experienced elsewhere. The number of business co-operatives increased in 1970 for the first time in many years led by Quebec and Alberta with new incorporations, mainly in the service group. Membership in co-operatives stood at 1,735,000 for 1970 a gain of about 45,000 over the previous year. All provinces except Ontario contributed to the increase.

Total business volume of marketing and purchasing co-operatives recorded a gain of \$78.8 million or 4% for 1970 (Table 17.44) with farm product marketings, supply sales, service revenue, and other income all showing an increase. On a geographic basis only New Brunswick and the interprovincials were down for the year. Assets of the marketing and purchasing co-operatives declined by \$25 million during the year due to the drop in grain inventory values and a retrenchment in property and equipment investment. The number of co-operatives declined again in 1970 as it has for a number of years. Membership rose on the strength of gains in Quebec, Alberta and British Columbia. Farm product marketings by marketing and

purchasing co-operatives rose to \$1,288.4 million made possible by the modest improvement in the western grain situation (Table 17.45). Dairy product marketings continued an upward trend into 1970. Fruit and vegetable marketings slipped almost 10% during the year, led by British Columbia but also including Ontario, Quebec and New Brunswick. The apple crop in British Columbia was satisfactory but production of tender tree and soft fruits was hard hit by extensive winter frost damage. Nova Scotia fruit and vegetable marketings rose on the strength of a good apple crop, as did those of Alberta and Prince Edward Island with better returns from potatoes. Livestock marketings rose on good gains in Saskatchewan, British Columbia and Nova Scotia. Poultry and eggs moved slightly up, with a good gain in Quebec countering declines in some other areas. Miscellaneous marketings eased down about 4%. Maple products climbed about 10% while honey and tobacco sales slumped. Supply sales of marketing and purchasing co-operatives advanced \$22 million or 3% for the year despite the fact that cash receipts to Canadian farmers declined almost 2% in the period. However, total supply sales represented a mixture of two different trends: sales in the Prairie Provinces (including the interprovincials) were unchanged, while sales in the other provinces taken as a group, made a very comfortable gain of nearly 6%. Although poor economic conditions affected all supply sales in the Prairie Provinces, fertilizer and machinery were the only categories which had major declines. Fertilizer sales continued on a downward trend started in the previous year reflecting a combination of depressed prices caused by overcapacity in the industry and lower demand by farmers suffering from lower grain shipments and thus reduced incomes. The effect of economic conditions on farm machinery sales was extremely harsh with farmers cutting their purchases drastically.

Business volume of the service co-operatives expanded by about 8% in 1970 to \$70.5 million and consisted of service revenue \$30.9 million, marketing of farm products and sale of supplies \$37.8 million, and miscellaneous income \$1.8 million. The rise in business volume was led by the feeder co-operatives in Alberta and Saskatchewan where more and more farmers turned to cattle feeding as a means of marketing their grain. An added impetus to feeding was provided in Alberta through the introduction of new regulations under their feeder loan legislation which permit larger borrowings by individual farmer-feeders. Quebec wood-cutting co-operatives turned in another year of increased volume. The business of medical insurance co-operatives declined for the second consecutive year with reduced coverage in British Columbia and Ontario as the result of changes in medical care legislation in the two provinces. Natural gas co-operatives in Alberta experienced another year of growth while rural electric co-operatives levelled off after a long period of expansion. Service revenues in New Brunswick picked up on the first full year's operation of a large housing co-operative. Assets of the service co-operatives rose 9% in the year to \$156.5 million. Membership at 296,000 and number of co-operatives at 1,103 also represented gains over the previous year. Business volume of fishermen's co-operatives rose about \$2.0 million or 6% for 1970. All provinces were on the uptrend except British Columbia which suffered a mild decline as a result of rising prices not quite making up for a decrease in production. Asset values of the fishermen's co-operatives at \$18.0 million were virtually unchanged from the preceding year as were the number of associations reporting and reported membership.

Wholesale business volume advanced \$30.0 million or 5% for the year with almost all of the increase occurring in supply sales led by food products and feed, while marketings were little changed from the previous year. Food sales were boosted by large gains in Quebec while feed sales reflected an increase in the sale of western feed grains in central Canada which suffered a crop reduction. Fertilizer sales were unchanged, a continued decline in the Prairie Provinces matching increases in other areas. Building material sagged with the general slump in construction activity in the West. Petroleum sales were up substantially, paced by large gains in Quebec where special emphasis has been placed on accommodating the continuing population shift from rural to urban areas. Hardware and machinery sales made good gains in eastern Canada while clothing and home furnishings, and miscellaneous sales were moderately ahead in most areas. On the marketing side poultry and eggs were hit by a sharp drop in broiler chicken prices, while livestock volume was unchanged with a bad year in Quebec offsetting gains in Ontario and the Maritimes. The number of wholesale co-operatives declined by one in 1970 when the British Columbia Co-operative Wholesale Society was merged with Federated Co-operatives Limited. Assets of the wholesales at year-end 1970 totalled \$235.2 million, an increase of \$13.0 million or 6% during the period.

17.6 Government aid and controls

17.6.1 The Department of Consumer and Corporate Affairs

The functions of the Department relate to consumer affairs; corporations and corporate securities; combines, mergers, monopolies and restraint of trade; bankruptcy and insolvency; patents, copyrights and trade marks.

The Department has five main divisions — the Bureau of Consumer Affairs, the Bureau of Corporate Affairs, the Bureau of Intellectual Property, the Bureau of Field Operations and the Office of the Director of Investigation and Research under the Combines Investigation Act. The Bureau of Consumer Affairs co-ordinates government activities in the field of consumer affairs. Branches within the Bureau include Consumer Services, Consumer Research and Consumer Standards. The Bureau of Corporate Affairs administers legislation and regulations pertaining to corporations. Its branches include Corporations, Bankruptcy, Securities and Research. The Bureau of Intellectual Property administers laws pertaining to patents, copyright and industrial design, and trade marks, with a branch responsible for each of these three fields. The Bureau of Field Operations supervises the Department's operations across Canada, staffing regional offices in Vancouver, Winnipeg, Toronto, Montreal and Halifax and district offices in 22 other cities. They ensure that laws and regulations administered by the Department are uniformly applied and interpreted in all parts of the country. The field force includes consumer consultants and information officers in each region, complaints officers, inspectors and specialists in the fields of bankruptcy and false and misleading advertising.

The Office of the Director of Investigation and Research, Combines Investigation Act, has four branches, specializing in Combinations, Mergers and Monopolies, Trade Practices and Research. The Restrictive Trade Practice Commission (Combines Investigation Act) is also in the Department and reports directly to the Minister.

Anti-combines legislation. Canadian anti-combines legislation seeks to eliminate restrictive trade practices in order to stimulate maximum production, distribution and employment through open competition. Legislative measures, including some formerly included in the Criminal Code, were amended in 1960 and consolidated into the Combines Investigation Act (RSC 1970, c.C-23).

In general terms, the Combines Investigation Act makes illegal the operation of combines that prevent, or lessen "unduly", competition in production, manufacture, purchase, barter, sale, storage, rental, transportation or supply of an article of trade or commerce or in the price of insurance. Although the exchange of statistics or defining of product standards are not to be construed as illegal practices, this exemption is no longer valid if the purpose of the exchange of information is to reduce the possibility of increased competition in the fields of prices, production quantities or quality, customers, markets or distribution channels, or if it has the effect of restricting entry or expansion into that particular business, trade or industry. While combines which relate to export trade only are generally exempt from these constraints imposed by the Act, any such arrangement that may have an adverse effect on the volume of export trade or on the businesses of Canadian competitors or domestic consumers is still subject to prosecution.

Under the Act it is illegal to participate in a merger or a monopoly that effectively operates to the detriment of the public interest or that lessens competition.

Price discrimination and "predatory price cutting" are treated very explicitly in the Act. No supplier may make a practice of discriminating among his competing trade customers by offering more advantageous prices to one over another. Under the law, if a second buyer is willing to buy on the same terms and in the same quantities, he must be given the same price. Prices established by a supplier cannot be set lower in one locality than another, or unreasonably low anywhere, if the policy is designed to eliminate or lessen competition or has that effect.

Advertising or display allowances to competing trade customers must be granted in proportion to their purchases and any expenses required to be incurred by customers must also be in proportion to their purchases. No service may be exacted in return for allowances unless all different types of customers are able to perform that service.

Other sections of the Act forbid misleading or deceptive advertising, either as to normal price or as to presumably factual statements describing goods or property offered for sale.

The "resale price maintenance" clause of the Act is possibly one of the most explicit in the field of restrictive practices. The suggested list price for goods offered for resale at the wholesale or retail level can be only that — a suggested price. No supplier of goods for resale may prescribe the final price at which the goods must be sold, nor can he cut off supplies if a merchant refuses to abide by the suggested prices. Some relief to the supplier is offered by the qualifications that no one can be automatically considered to have practised resale price maintenance if the goods are withheld because there is sound reason to believe that the merchant was making a practice of using the products of the supplier as "loss-leaders" or as bait advertising, or engaging in misleading advertising or failing to provide the service that the final purchaser had a right to expect.

The Director of Investigation and Research is responsible for investigating combines and other restrictive practices, and the Restrictive Trade Practices Commission is responsible for appraising the evidence submitted to it by the Director and the parties under investigation, and for making a report to the Minister of Consumer and Corporate Affairs. When there are reasonable grounds for believing that a forbidden practice is engaged in, the Director may obtain from the Commission authorization to examine witnesses, search premises, or require written returns. After examining all the information available, if the Director believes that it proves the existence of a forbidden practice, he submits a statement of the evidence to the Commission and to the parties believed to be responsible for the practice. The Commission then sets a time and place for a hearing at which both sides are represented. The Commission prepares and submits a report to the Minister of Consumer and Corporate Affairs; such reports are ordinarily required to be published within 30 days.

Under the provisions of the Act, general inquiries may be made into restraints of trade which, although not forbidden or punishable, may affect the public interest. The courts, including the Federal Court of Canada, in addition to imposing punishment for a contravention of the legislation, may issue an order restraining persons from further contravention or directing the dissolution of a merger or monopoly as the case may be. Application also may be made to the courts for such an order in lieu of prosecuting and convicting for a contravention of the legislation. Prosecutions for offences against the substantive provisions of the legislation (other than the section dealing with price misrepresentation which is punishable only on summary conviction) may be taken either in the provincial courts or with the consent of the accused in the Federal Court of Canada.

Nine reports of inquiries under the legislation were published between January 1, 1968 and June 30, 1971 and are listed in the 1972 *Canada Year Book*. Since then the report of inquiry into draught beer in Metropolitan Toronto has become available. Copies of all reports are available from Information Canada or the Office of the Director of Investigation and Research.

On June 29, 1971, the Minister of Consumer and Corporate Affairs introduced Bill C-256 to replace the Combines Investigation Act with a new Competition Act. The Bill embodied many of the basic suggestions made in the Report of the Economic Council in July 1969. It was introduced to enable members of Parliament and interested individuals, corporations and associations to study and comment on it. The Bill, as presented, was allowed to expire on the Parliamentary Order Paper. It is expected that a number of the recommendations received will be incorporated in a revised Competition Bill.

Patents. Patents for inventions are issued under the provisions of the Patent Act (RSC 1970, c.P-4) and Patent Regulations have been proclaimed to carry into effect the objectives of the Act. Applications for patents for inventions and requests for information about such patents should be addressed to the Commissioner of Patents, Bureau of Intellectual Property, Department of Consumer and Corporate Affairs.

In the year ended March 31, 1972, 29,242 patents were granted. Of these, 5.4% resulted from inventions made by residents of Canada, 6.9% by residents of the United Kingdom and 61.6% by residents of the United States.

Printed copies of Canadian patents issued from January 1, 1948 to date are available at \$1 each. The *Patent Office Record*, issued weekly, contains a list of patents issued during the week covered, information about services in the Patent Office and information of concern to the patent profession.

Canadian and foreign patents may be consulted at the Patent Office Library. British

patents and abridged specifications thereof from 1617 to date and United States patents from 1845 to date are available, as well as many patents, indexes, journals and reports from Australia, India, Ireland, New Zealand, Pakistan, South Africa, Austria, Belgium, Colombia, Czechoslovakia, Egypt, France, Federal Republic of Germany, Italy, Japan, Mexico, the Netherlands, Norway, Sweden, Switzerland and Yugoslavia. A list of the foreign patents available is published in the Patent Office Record.

Copyrights, industrial designs and timber marks. Copyright protection is governed by the Copyright Act (RSC 1970, c.C-30) in force since 1924. Protection is automatic without any formality, although a system of voluntary registration is provided. Application for registration should be addressed to the Commissioner of Patents, Ottawa.

The Act sets out the qualifications for a copyright and its duration: "Copyrights shall subsist in Canada...in every original literary, dramatic, musical and artistic work, if the author was, at the date of the making of the work, a British subject, a citizen or subject of a foreign country which has adhered to the Berne Convention and the additional Protocol...or resident within Her Majesty's Dominions. The term for which the copyright shall subsist shall, except as otherwise expressly provided by this Act, be the life of the author and a period of fifty years after his death."

Canada belongs to the Universal Copyright Convention. This means that the works of Canadian authors are protected in the United States without formality of compulsory registration or the obligation of printing in the United States, provided that, from the first publication, the work bears in a prominent place the copyright symbol, followed by the name of the proprietor and the year of publication.

Copyright protection is extended to records, perforated rolls, cinematographic films, and other contrivances by means of which a work may be mechanically performed. The intention of the Act is to enable Canadian authors to obtain full copyright protection in Canada, in all parts of the Commonwealth, in foreign countries of the Copyright Union and in the United States. Protection of industrial designs and of timber marks is afforded under the Industrial Design and Union Label Act and the Timber Marking Act. Registers of such designs and marks are kept by the Copyright Branch of the Patent Office.

Copyrights registered during the year ended March 31, 1972 numbered 10,072; in addition 1,456 industrial designs were registered.

Trade marks. The Trade Marks Office, a Branch within the Bureau of Intellectual Property, administers the Trade Marks Act (RSC 1970, c.T-10) which covers all legislation concerning the registration and use of trade marks and supersedes from July 1, 1954, former legislation enacted under the Unfair Competition Act, the Union Label Act and the Shop Cards Registration Act. Correspondence relating to an application for registration of a trade mark should be addressed to the Registrar of Trade Marks, Ottawa.

Applications are advertised for opposition purposes in the *Trade Marks Journal*, a weekly publication that also gives particulars of every registration of a trade mark and every registration of a registered user. The required fee payable on application for registration of a trade mark is \$35, for advertisement of an application \$25 and for registration of a person as a registered user of a trade mark \$35.

Trade marks registered during the year ended March 31, 1972 numbered 7,200 compared with 6,897 for the year before; renewals totalled 3,435.

17.6.2 Trade standards

17.6.2.1 The Standards Council of Canada

The Standards Council of Canada acts as a national co-ordinating institution through which organizations concerned with voluntary standardization may co-operate in recognizing, establishing and improving standards in Canada and develop a broader and more energetic Canadian standards program to meet both national and international responsibilities. Its structure is intentionally designed to make maximum use of organizations already functioning efficiently in order to broaden and co-ordinate the total range of activities to obtain a more complete coverage of standards needs.

The objectives of the Council are to foster and promote voluntary standardization in fields relating to the construction, manufacture, production, quality, performance and safety of buildings, structures, manufactured articles and products and other goods, including

components, not expressly provided for elsewhere by law, to advance the national economy, benefit the health, safety and welfare of the public, assist and protect consumers, facilitate domestic and international trade and further international co-operation in the field of standards. The Council is responsible for co-ordinating the planning and execution of a program for the development of standards in the metric (SI) system. This activity is in support of the over-all program which is being prepared by the Preparatory Commission for Conversion to the Metric System.

The Council consists of not more than 57 members, headed by a president and a vice-president. The seats of the Council, other than the 16 assigned to government representatives (six federal and ten provincial), will be occupied by representatives of national organizations. Membership will be broadly representative of all levels of government (federal, provincial and municipal), primary and secondary industries, distributive and service industries, trade associations, labour unions, consumer associations and the academic community. Members employed in the Public Service of Canada hold office during pleasure. Other members are appointed for a term not exceeding three years. The day-to-day work is carried out by a permanent staff in Ottawa, headed by an executive director who is appointed by the Governor in Council.

17.6.2.2 Trade standards and regulations

In its consumer program, the Department of Consumer and Corporate Affairs is responsible for the administration of broad legislation which affects the business community. Policies and programming are determined by the Standards Branch, and the necessary field supervision by the Operations Branch.

Hazardous products. General regulations issued under the Hazardous Products Act provide for the banning or the regulated sale of a variety of dangerous products which are toxic, flammable, explosive, or corrosive. These relate largely to household products. Toy regulations are directed to eliminating dangerous toys.

General commodity field. The National Trade Mark and True Labelling Act provides a framework for the development of National Standards and true labelling in order to prevent deception in labelling and advertising. The Garment Sizing Regulations were developed as a National Standard for the sizing of children's garments. The labelling provision has been used for regulation for fur garments, watch jewels, textiles, etc. Textiles are subject to special new requirements established under a Textile Labelling Act passed in 1970.

Control of marking of previous metal articles is maintained under the Precious Metals Marking Act. This Act will shortly be replaced by a revised statute passed by Parliament.

In the packaging and labelling field, a Packaging and Labelling Act has been passed by Parliament which, when proclaimed, will give uniformity to packaging practices in Canada, reduce packaging and advertising deception, and control proliferation.

Food. In areas of health, grading, standards and composition, the Food and Drug Act, the Canadian Agricultural Products Standards Act and the Fish Inspection Act are generally applicable. The Consumer and Corporate Affairs Department is charged with administration of the economic fraud aspects in distribution. This responsibility relates mainly to labelling and advertising in any segment of the news media.

Advertising. Most legislation has particular requirements to ensure against misleading advertising, but Sections 36 and 37 of the Combines Investigation Act are especially noteworthy as they include general provisions against misleading advertising practices.

Measurement. The Weights and Measures Act prescribes the legal standards of weight and measure for use in Canada, it also requires control of the type of all weighing and measuring devices used for commercial purposes and their periodic verification and surveillance directed toward the elimination of device-tampering and short-weight sales. A replacing Act has been passed by Parliament and will be proclaimed with the issue of new regulations. The fundamental objectives of existing legislation are unchanged. The new Act is an updating, and complements the proposed packaging and labelling legislation.

The Electricity Inspection Act and the Gas Inspection Act control the approval before sale and use of devices used for metering or otherwise billing for sales of electricity and gas; they also provide a framework for continual in-use inspection.

17.6.3 Control and sale of alcoholic beverages

The retail sale of alcoholic beverages in Canada is controlled by provincial and territorial government liquor control authorities. Alcoholic beverages are sold directly by most of these liquor control authorities to the consumer or to licensees for resale. However, in some provinces, beer and wine are sold directly by breweries and wineries to consumers or to licensees for resale. During the year ended March 31, 1971, provincial government liquor authorities operated 1,269 retail stores and had 255 agencies in smaller centres of population.

Government revenue specifically related to alcoholic beverages and details of sales by value and volume for each province are given in Table 17.46. Statistics Canada report, *The control and sale of alcoholic beverages in Canada* (Catalogue No. 63-202) shows further detail as well as volume figures of production and warehousing transactions, the value and volume of imports and exports and the assets and liabilities of provincial liquor commissions.

Table 17.47 shows the value and volume of sales of alcoholic beverages in the years ended March 31, 1970 and 1971. It should be noted that the value does not always represent the final retail selling price of alcoholic beverages to the consumer because, when sold to licensees, only the selling price to licensees is known. Volume of sales is a more realistic indicator of trends in consumption although, as a measure of personal consumption by Canadians, it is subject to the same limitations as the figures of value sales and includes, in addition, purchases by non-residents.

17.7 Bankruptcies and commercial failures

Two series of figures are included here which, although closely related as far as subject matter is concerned, cover different aspects of the field of bankruptcies and commercial failures. The first is limited to the supervision, by the Superintendent of Bankruptcy, of the administration of bankrupt estates under the Bankruptcy Act (RSC 1970, c.B-3); it gives information on the amounts realized from the assets as established by debtors and indicates that values actually paid to creditors are invariably very much lower than such estimates alone would imply. It can therefore be assumed that this applies in even greater degree to the more extended fields covered in the second section, compiled by Statistics Canada, which is limited to bankruptcies and insolvencies made under federal legislation and includes business failures only.

Administration of bankrupt estates. The Bankruptcy Act was last revised in 1949 and amended in 1966. The amendments were instigated by exposures and suggestions of illegal and improper practices in connection with bankruptcy proceedings or administration. They do not constitute a complete revision of the Bankruptcy Act but were designed to provide, as an interim measure, remedies to the most urgent areas of complaints. They provide the Superintendent of Bankruptcy with direct and immediate authority in the field of investigation and inquiry, and tighten the procedures and requirements in a number of areas, such as that of proposals which an insolvent person may make to his creditors. In other words, these amendments were intended to provide remedies in situations where it had been shown by experience that abuses of the bankruptcy process are most likely to occur. The amendments also contain a new Part X entitled "The Orderly Payment of Debts" which may be brought into force in any province at the request of the provincial authorities concerned. Six areas have taken advantage of this part of the legislation: Alberta on April 17, 1967, Manitoba on June 1, 1967, Saskatchewan on April 1, 1969, British Columbia on June 1, 1970, Nova Scotia on July 1, 1970, Prince Edward Island in April 1971 and the Northwest Territories in November 1972.

A new program called the Small Debtor Program was instituted in June 1972. While it is not an amendment to the Bankruptcy Act, it authorizes federal employees who have been appointed as trustees to handle the estates of certain wage earners who cannot obtain the services of a private trustee.

A report issued annually by the Superintendent of Bankruptcy gives statistics and comments on various activities in the field of bankruptcy, such as prosecution for offences, issue of licences for trustees in bankruptcy, number of estates reported and closed during the year, and costs of bankruptcy administration in Canada. These data are summarized in Table 17.48.

Returns under the Bankruptcy and Winding-up Acts. Statistics Canada data on bankruptcies and insolvencies cover only failures coming under the federal Bankruptcy Act and the

Winding-up Act. Figures cover business failures only. Table 17.49 gives yearly comparisons of liabilities — as estimated by debtors — for the main regions of the country. Table 17.50 shows the number of bankruptcies and insolvencies by industry and economic area for 1971.

Sources

- 17.1 Manufacturing and Primary Industries Division, Industry Statistics Branch, Statistics Canada.
- 17.2 Manufacturing and Primary Industries Division, Industry Statistics Branch, Statistics Canada; *Industrial organization and concentration in the manufacturing, mining and logging industries, 1968*. Statistics Canada Cat. No. 31-514; *Concentration in the manufacturing industries of Canada*. Department of Consumer and Corporate Affairs, 1971; *Concentration in the Canadian manufacturing industries*, G. Rosenbluth. Princeton 1957; *The industrial diversification of multi-establishment manufacturing firms*, J.S. McVey. Canadian Statistical Review, July 1972.
- 17.3.1 Information Services Branch, Department of Industry, Trade and Commerce.
- 17.3.2 Supplied by the respective provincial government departments.
- 17.4 Merchandising and Services Division, Industry Statistics Branch, Statistics Canada. See also *The 1971 Census of Merchandising and Service Businesses in relation to an integrated system of national accounts*, Canadian Statistical Review, Feb. 1973.
- 17.5 Marketing and Trade Division, Economics Branch, Canada Department of Agriculture.
- 17.6.1 Information and Public Relations, Department of Consumer and Corporate Affairs.
- 17.6.2 The Standards Council of Canada; Information and Public Relations, Department of Consumer and Corporate Affairs.
- 17.6.3 Public Finance Division, Institutional and Public Finance Statistics Branch, Statistics Canada.
- 17.7 Superintendent of Bankruptcy, Department of Consumer and Corporate Affairs; Business Finance Division, General Statistics Branch, Statistics Canada.

Tables

..	not available	e	estimate
...	not appropriate or not applicable	p	preliminary
---	nil or zero	r	revised
--	too small to be expressed	certain tables may not add due to rounding	

17.1 Value of shipments of goods of own manufacture, by province, 1961 and 1969-72 (million dollars)

Province or territory	1961	1969	1970	1971P	1972P
Newfoundland	135.9	242.4	263.3	256.1	294.4
Prince Edward Island	30.6	56.9	62.7	..	..
Nova Scotia	381.4	731.5	758.0	760.8	856.9
New Brunswick	390.6	708.9	730.2	770.3	858.3
Quebec	7,022.2	12,810.2	13,084.0	13,652.0	14,435.9
Ontario	11,563.7	23,847.8	24,009.6	25,733.7	28,419.0
Manitoba	716.7	1,230.0	1,260.4	1,315.3	1,455.1
Saskatchewan	331.9	530.4	544.6	611.2	625.3
Alberta	935.5	1,849.3	1,900.2	1,948.1	2,226.9
British Columbia	1,927.0	3,917.8	3,760.6	4,012.6	4,505.5
Yukon Territory and Northwest Territories	3.4	5.2	7.3	..	..
Canada	23,439.0	45,930.4	46,380.9	49,130.0 ¹	53,748.5 ¹

¹ Includes Prince Edward Island, Yukon Territory and Northwest Territories.

17.2 Value of shipments¹ of goods of own manufacture, by industry group, 1961 and 1969-72 (million dollars)

Industry group	1961	1969	1970	1971P	1972P
Food and beverage industries	5,039.5	8,223.8	8,639.1	8,833.6	9,795.6
Tobacco products industries	334.9	487.9	527.2	553.4	572.3
Rubber industries	331.1	632.7	635.0	661.0	725.1
Leather industries	291.2	412.3	397.4	425.3	468.2
Textile industries	874.5	1,688.4	1,655.3	1,730.7	1,867.8
Knitting mills	219.4	402.6	414.7	455.7	469.2
Clothing industries	802.7	1,331.8	1,371.0	1,490.0	1,672.5
Wood industries	1,036.2	2,149.6	1,951.5	2,288.9	2,761.0
Furniture and fixture industries	359.6	729.0	731.5	728.3	853.1
Paper and allied industries	2,203.5	3,833.8	3,955.4	3,796.2	4,011.2
Printing, publishing and allied industries	854.8	1,488.3	1,545.3	1,599.6	1,748.8
Primary metal industries	1,937.0	3,574.4	3,918.5	3,977.6	4,235.0
Metal fabricating industries (except machinery and transportation equipment industries)	1,510.6	3,162.0	3,327.6	3,450.4	3,731.0
Machinery industries (except electrical machinery)	658.3	1,734.7	1,759.8	1,863.4	2,057.7
Transportation equipment industries	1,845.8	6,484.6	5,757.3	6,798.3	7,498.4
Electrical products industries	1,208.3	2,607.5	2,664.4	2,869.8	3,109.7
Non-metallic mineral products industries	676.0	1,286.9	1,278.9	1,478.5	1,548.2
Petroleum and coal products industries	1,219.2	1,720.3	1,819.1	1,960.6	2,093.6
Chemical and chemical products industries	1,435.8	2,581.8	2,620.8	2,741.5	2,902.5
Miscellaneous manufacturing industries	600.5	1,398.0	1,411.0	1,427.2	1,627.5
All manufacturing industries	23,439.0	45,930.4	46,380.9	49,130.0	53,748.5

¹ Data compiled according to the 1960 revision of the Standard Industrial Classification.

17.3 Net profit before taxes, as a percentage of total revenue of corporations classified to the manufacturing industries and forestry, 1969-71

Industry group	1969	1970	1971
Food and beverage industries	6.4	5.5	5.4
Rubber industries	8.0	6.5	9.8
Textile industries	4.0	2.6	3.5
Wood industries	5.9	-0.4	3.3
Paper, allied industries and forestry	8.7	5.0	3.0
Printing, publishing and allied industries	8.5	7.6	8.6
Primary metal industries	8.9	7.6	7.1
Metal fabricating industries (except machinery and transportation equipment)	5.9	5.6	6.5
Machinery industries (except electrical machinery)	7.0	4.8	6.2
Transportation equipment industries	5.2	1.9	4.9
Electrical products industries	5.0	3.4	4.8
Non-metallic mineral products industries	7.0	5.1	8.1
Petroleum and coal products industries	8.6	9.3	10.6
Chemical and chemical products industries	8.9	7.8	8.0
Other manufacturing industries	8.3	7.1	8.4
All manufacturing industries	6.8	5.1	6.0

17.4 Summary statistics of manufactures, 1961-70

Year	Estab- lish- ments No.	Activity								
		Manufacturing activity				Cost of fuel and electricity ¹ \$'000	Cost of materials and supplies used \$'000	Value of shipments of goods of own manu- facture \$'000	Value added \$'000	
		Production and related workers		Wages \$'000						
		Number	Man- hours paid '000							
1961	33,357	939,413	1,968,163	3,532,943	516,409	12,579,798	23,438,956	10,434,832		
1962	33,414	974,376	2,071,376	3,834,514	540,447	13,974,877	25,790,087	11,429,644		
1963	33,119	1,003,566	2,137,977	4,095,916	564,387	15,337,534	28,014,888	12,272,734		
1964	33,630	1,057,502	2,265,188	4,513,633	615,108	16,928,476	30,856,099	13,535,991		
1965	33,310	1,115,892	2,384,002	5,012,345	675,641	18,622,213	33,889,425	14,927,764		
1966	33,377	1,172,943	2,498,012	5,575,206	731,726	20,642,695	37,303,455	16,351,740		
1967	33,267	1,168,651	2,478,916	5,869,085	759,780	21,371,785	38,955,389	17,005,696		
1968	32,643	1,160,226	2,458,791	6,278,429	808,764	23,090,970	42,061,555	18,332,204		
1969	32,669	1,189,887	2,515,183	6,921,525	860,525	25,383,484	45,930,438	20,133,593		
1970	31,928	1,167,063	2,450,058	7,232,256	903,264	25,699,999	46,380,935	20,047,801		
		Total activity		Working owners and partners		Total employees ²		Total cost of materials and supplies used and goods purchased for resale ³ \$'000	Total operational revenue ⁴ \$'000	Total value added ⁵ \$'000
		Number	With- drawals \$'000	Number		Salaries and wages \$'000				
1961	33,357	16,989	57,980	1,352,605		5,701,651	14,564,247	25,895,611	10,931,561	
1962	33,414	17,228	60,744	1,389,516		6,096,174	16,118,144	28,473,319	11,986,666	
1963	33,119	16,030	59,426	1,425,440		6,495,289	17,558,196	30,823,107	12,875,073	
1964	33,630	15,747	60,098	1,491,257		7,080,939	19,467,899	34,071,582	14,247,184	
1965	33,310	14,620	59,457	1,570,299		7,822,925	21,563,010	37,638,412	15,785,311	
1966	33,377	13,894	60,076	1,646,024		8,695,890	24,195,610	41,722,527	17,260,256	
1967	33,267	13,377	59,187	1,652,827		9,254,190	25,546,764	44,143,808	18,049,639	
1968	32,643	12,084	58,798	1,642,352		9,905,504	27,546,942	47,646,657	19,483,614	
1969	32,669	11,583	59,128	1,675,332		10,848,341	30,347,637	52,130,615	21,456,276	
1970	31,928	10,760	58,605	1,637,001		11,363,712	30,805,904	52,886,022	21,417,748	

¹ Cannot be reported separately for manufacturing and non-manufacturing activities but related substantially to manufacturing activity.

² Includes production and related workers, administrative and office employees, sales, distribution and other employees; excludes working owners and partners.

³ Includes supplies used in both manufacturing and non-manufacturing activity.

⁴ Includes shipments of goods of own manufacture, value of shipments of goods purchased for resale and other operational revenue.

⁵ Value of total operational revenue less total cost of materials, supplies, fuel and electricity used and goods purchased for resale in the same condition; all adjusted for inventory changes where required.

17.5 Summary statistics¹ of manufactures, by industry group, 1969 and 1970

Industry group and year	Estab-lish-ments No.	Manufacturing activity				Cost of fuel and electricity \$'000	Cost of materials and supplies used \$'000	Value of shipments of goods of own manu-facture \$'000	Value added \$'000	Total activity		Total value added \$'000
		Production and related workers		Wages \$'000	Number					Total employees Number	Salaries and wages \$'000	
		Man-hours paid '000	Number									
Food and beverage industries	1969 6,082 1970 5,778	140,553 143,501	297,600 302,501	718,760 785,273	102,871 101,532	5,337,505 5,644,570	8,223,767 8,659,102	2,832,912 2,945,122	224,111 221,768	1,293,546 1,383,910	2,992,330 3,122,179	
Tobacco products industries	1969 30 1970 29	7,361 7,331	14,286 14,362	43,813 49,522	1,832 2,042	329,657 346,750	527,228 527,748	201,999 207,144	19,999 25,750	66,871 171,187	202,962 349,721	
Rubber industries	1969 104 1970 107	16,898 16,064	35,894 33,846	104,688 97,369	8,882 8,882	298,200 298,005	634,748 634,959	331,749 334,909	25,032 24,032	174,925 174,925	354,286 354,286	
Leather industries	1969 521 1970 487	26,530 24,286	54,007 49,469	104,299 100,359	3,000 2,857	205,057 194,744	412,274 397,415	207,353 199,119	31,052 28,286	137,530 131,433	211,388 203,434	
Textile industries	1969 973 1970 953	59,582 57,531	126,889 120,515	281,177 284,006	23,900 22,974	946,744 902,517	1,688,357 1,655,319	747,964 724,725	75,351 72,916	399,543 413,283	799,714 741,687	
Knitting mills	1969 333 1970 318	21,578 20,658	45,815 43,482	80,886 81,779	2,982 3,217	227,137 232,900	402,637 414,690	180,440 178,306	24,704 23,783	104,850 109,581	181,988 178,881	
Clothing industries	1969 2,289 1970 2,184	87,614 86,617	174,586 173,278	321,035 334,079	4,163 4,163	698,687 711,266	1,331,832 1,371,041	636,603 652,554	97,101 97,418	415,543 425,373	642,872 659,131	
Wood industries	1969 3,503 1970 3,330	79,646 75,225	168,588 157,535	439,285 446,439	37,414 36,274	1,209,884 1,138,722	2,149,584 2,981,475	951,215 789,764	92,324 87,539	551,880 532,847	801,788 393,026	
Furniture and fixture industries	1969 2,313 1970 2,209	36,098 34,497	76,524 72,839	173,338 173,338	7,395 6,790	340,450 341,238	738,992 731,465	389,089 385,226	44,248 42,238	232,847 235,186	393,026 389,864	
Paper and allied industries	1969 640 1970 638	91,617 97,636	200,019 196,636	651,268 687,755	208,196 214,544	1,920,638 1,963,911	3,833,814 3,955,435	1,712,574 1,794,000	121,877 121,883	626,172 626,243	1,748,172 1,830,972	
Printing, publishing and allied industries	1969 3,650 1970 3,600	47,804 49,671	97,633 101,270	309,843 337,788	9,935 9,169	487,131 510,291	1,488,302 1,545,320	996,404 1,025,206	84,654 84,045	276,958 268,958	1,010,503 1,030,238	
Primary metal industries	1969 4,17 1970 407	83,564 88,839	173,956 185,556	583,498 680,780	142,501 170,690	1,817,165 2,025,371	3,574,422 3,918,548	1,621,348 1,769,087	110,953 116,545	839,046 958,507	1,667,477 1,808,878	
Metal fabricating industries (except machinery and transportation equipment industries)	1969 3,991 1970 4,031	105,409 106,160	225,449 226,506	662,245 717,029	34,671 34,189	1,520,883 1,618,750	3,162,039 3,327,639	1,632,131 1,700,549	141,417 139,471	957,930 1,011,060	1,705,444 1,771,304	
Machinery industries (except electrical machinery)	1969 830 1970 848	48,749 46,912	103,424 98,664	322,398 331,892	12,768 13,004	883,235 887,004	1,734,673 1,759,766	878,173 878,977	81,747 79,725	602,881 636,243	1,162,465 1,206,903	
Transportation equipment industries	1969 881 1970 905	115,737 105,164	250,102 221,993	372,408 378,781	39,467 39,338	4,148,804 3,804,026	6,484,568 5,757,285	2,328,156 1,946,300	157,755 146,979	536,243 520,845	2,597,975 2,194,977	
Electrical products industries	1969 720 1970 735	80,690 85,382	168,130 156,698	443,505 449,473	19,397 19,494	1,394,999 1,360,847	2,607,481 2,664,368	1,272,500 1,268,328	126,986 120,112	813,227 840,938	1,430,108 1,441,615	
Non-metallic mineral products industries	1969 1,286 1970 1,298	38,107 36,422	84,204 78,919	246,196 246,297	71,837 74,112	486,705 485,178	1,286,857 1,278,895	738,938 729,312	51,888 49,963	357,764 364,661	765,035 756,344	
Petroleum and coal products industries	1969 99 1970 94	6,590 6,686	14,787 14,856	61,218 64,745	18,522 19,178	1,385,467 1,452,565	1,720,340 1,819,127	317,168 356,228	15,633 16,653	151,653 160,653	324,540 360,634	
Chemical and chemical products industries	1969 1,136 1970 1,128	39,751 40,086	85,045 85,471	259,022 279,854	96,929 104,708	1,126,614 1,152,262	2,581,824 2,620,835	1,381,328 1,377,623	78,441 79,070	592,574 637,157	1,492,512 1,493,749	
Miscellaneous manufacturing industries	1969 2,871 1970 2,849	56,409 55,357	118,244 115,663	277,182 286,699	14,122 14,697	617,794 624,276	1,398,021 1,411,022	777,514 785,322	77,452 75,647	441,672 457,208	785,133 874,457	
Total	1969 32,669 1970 31,928	1,189,887 1,167,063	2,515,183 2,450,058	860,525 7,232,256	903,264 903,264	25,383,484 25,699,999	45,930,438 46,380,935	20,133,593 20,047,801	1,675,332 1,637,001	10,848,341 11,363,712	21,456,276 21,417,748	

¹ Data compiled according to the 1960 revision of the Standard Industrial Classification.

17.6 Summary statistics¹ of the forty leading industries, ranked according to value of shipments of goods of own manufacture, 1970

Industry	Estab-lish-ments No.	Manufacturing activity			Cost of fuel and elec-tricity \$'000	Cost of materials and supplies used \$'000	Value of shipments of goods of own manu-facture \$'000	Value added \$'000	Total activity		Total value added \$'000
		Production and related workers	Man-hours paid '000	Wages \$'000					Number	Salaries and wages \$'000	
1 Motor vehicle manufacturers	22	25,303	54,646	229,311	12,129	2,300,124	2,962,528	664,423	38,145	371,804	869,195
2 Paper and paper mills	139	62,025	134,291	511,654	204,359	1,334,375	2,850,836	1,323,278	80,371	703,395	1,331,067
3 Slaughtering and meat processors	453	22,182	47,263	153,181	11,391	1,684,137	2,061,419	362,609	31,059	228,480	378,343
4 Petroleum refining	40	6,077	13,533	60,500	18,181	1,418,328	1,758,940	331,965	14,725	153,598	333,057
5 Iron and steel mills	45	38,317	79,657	309,128	62,675	831,794	1,691,662	835,956	49,169	423,985	838,430
6 Dairy products industry	880	14,083	30,557	81,587	21,943	999,080	1,369,206	346,014	30,657	196,934	389,144
7 Miscellaneous machinery and equipment manufacturers	656	33,809	71,731	242,006	8,984	630,855	1,277,801	650,722	51,896	395,673	711,492
8 Motor vehicle parts and accessories manufacturers	182	30,647	64,231	225,617	14,306	716,932	1,272,154	541,079	38,866	309,574	549,253
9 Sawmills and planing mills	1,772	42,540	89,928	261,805	23,578	687,168	1,135,377	436,043	48,776	314,014	439,035
10 Smelting and refining	1,225	26,537	54,189	202,502	88,630	438,846	1,080,015	552,540	37,298	305,885	586,182
11 Metal stamping and pressing industry	587	19,881	43,130	132,576	7,121	454,906	807,569	353,723	25,916	190,471	364,845
12 Miscellaneous food processors, n.e.s.	275	10,735	22,528	61,915	8,387	441,713	782,492	337,838	18,244	124,854	359,898
13 Communications equipment manufacturers	214	26,753	55,428	158,386	4,058	316,478	712,137	393,593	45,213	326,373	473,072
14 Commercial printing	2,105	28,266	58,151	182,785	4,608	280,549	711,429	427,676	38,874	276,959	435,531
15 Publishing and printing	653	16,145	32,558	116,315	3,895	144,755	588,795	239,552	32,828	237,652	437,258
16 Feed industry	789	5,359	11,897	29,244	7,288	456,602	585,843	122,397	9,485	57,605	145,585
17 Aircraft and aircraft parts manufacturers	90	18,765	38,799	139,726	4,436	229,097	543,708	310,175	31,103	263,309	313,261
18 Manufacturers of electrical industrial equipment	177	15,248	31,652	99,026	4,160	223,722	514,134	289,832	27,119	202,056	313,756
19 Women's clothing factories	623	26,981	53,803	106,880	1,093	285,843	512,804	224,360	30,457	137,541	226,019
20 Men's clothing factories	475	30,125	60,561	120,026	1,635	271,457	512,214	238,699	34,230	155,802	240,872
21 Bakeries	1,921	19,129	40,799	95,435	11,091	229,322	502,891	262,536	30,081	168,332	274,200
22 Miscellaneous metal fabricating industries	176	15,178	31,763	93,846	6,389	237,537	478,318	238,442	20,543	138,881	246,972
23 Fabricated structural metal industry	134	14,242	30,556	116,152	3,775	212,122	476,107	260,210	19,104	160,792	284,008
24 Fruit and vegetable canners and preservers	238	11,914	24,502	55,012	4,912	288,092	472,211	181,944	16,060	88,914	195,864
25 Manufacturers of industrial chemicals (organic), n.e.s.	31	6,557	14,489	58,970	44,463	206,191	464,923	220,284	12,530	121,680	235,501
26 Manufacturers of electric wire and cable	32	6,075	13,602	44,595	3,108	280,068	442,021	158,946	8,710	67,647	160,076
27 Wire and wire products manufacturers	235	12,503	26,392	83,971	5,360	241,904	441,577	202,611	16,598	119,553	210,627
28 Plastics fabricating industry, n.e.s.	515	16,431	34,412	82,211	6,475	209,130	438,310	228,401	20,157	114,723	235,163
29 Breweries	42	5,324	11,334	44,762	4,728	103,628	399,442	292,964	9,277	85,237	298,364
30 Tire and tube manufacturers	14	7,664	16,456	61,463	5,458	195,578	389,066	192,614	11,923	98,415	197,608
31 Manufacturers of pharmaceuticals and medicines	145	5,459	11,153	30,130	2,356	125,440	386,870	268,771	13,122	99,347	280,963
32 Miscellaneous paper converters	213	10,531	22,240	60,181	3,630	208,061	384,270	175,845	16,071	107,578	197,160
33 Miscellaneous chemical industries, n.e.s.	333	8,228	17,104	49,328	5,976	187,461	378,956	184,637	14,996	110,855	206,161
34 Tobacco products manufacturers	19	6,074	11,818	43,898	1,471	180,700	375,909	190,736	8,483	66,171	191,417
35 Manufacturers of industrial chemicals (inorganic), n.e.s.	94	5,868	12,558	48,076	36,911	142,196	364,674	184,210	10,131	86,920	208,445
36 Soft drink manufacturers	395	6,071	13,038	33,462	6,284	161,239	357,753	191,773	14,506	94,267	199,988
37 Fish products	344	16,787	34,008	60,122	5,723	232,451	354,976	126,026	19,254	76,856	143,652
38 Distilleries	27	3,136	6,968	25,640	5,062	117,390	344,028	247,262	5,807	49,946	248,033
39 Household furniture manufacturers, n.e.s.	712	17,635	37,338	84,459	3,208	159,834	340,914	178,626	20,992	110,395	179,677
40 Flour and breakfast cereal products industry	51	3,278	6,921	23,230	2,620	216,774	306,255	86,774	5,132	38,529	92,042
Total, 40 leading industries	16,173	697,862	1,465,784	4,619,113	681,857	18,081,879	31,830,534	13,254,511	1,007,948	7,381,301	14,021,216
Total, all manufacturing industries	31,928	1,167,063	2,450,058	7,232,256	903,264	25,699,999	46,380,935	20,047,801	1,637,001	11,363,712	21,417,748

¹ Data compiled according to the 1970 revision of the Standard Industrial Classification.

17.7 Summary statistics¹ of manufactures, by industry group, 1970

Industry group	Estab-lish-ments No.	Manufacturing activity			Cost of fuel and elec- tric- ity \$'000	Cost of materials and supplies used \$'000	Value of shipments of goods of own manu- facture \$'000	Total activity		Total value added \$'000
		Production and related Number	Man- hours paid '000	Wages \$'000				Total employees Number	Salaries and wages \$'000	
Food and beverage industries	5,778	143,501	302,501	785,273	101,532	5,644,570	8,639,102	221,768	1,383,910	3,122,179
Tobacco products industries	79	7,331	14,362	49,572	2,042	346,750	527,228	4,992	4,034	208,088
Rubber and plastics products industries	622	32,495	68,258	189,579	15,356	507,135	1,073,270	44,189	289,648	589,449
Leather industries	487	24,286	49,469	100,359	21,857	194,529	1,397,415	28,286	131,433	203,434
Textile industries	931	55,159	116,369	272,553	23,557	859,189	1,575,783	69,714	393,047	706,788
Textile mills	318	81,779	43,482	81,779	23,217	711,266	1,414,690	23,735	106,985	178,881
Knitting mills	3	20,658	43,482	81,779	4,163	711,266	1,414,690	23,735	106,985	178,881
Clothing industries	2,184	86,617	173,278	334,079	41,163	1,138,722	1,561,475	87,829	425,673	659,131
Furniture and fixture industries	3,330	75,225	157,535	446,439	36,274	1,138,722	1,561,475	87,829	425,673	659,131
Paper and allied industries	2,209	34,497	72,839	173,338	6,790	1,341,258	383,226	42,238	235,186	389,864
Printing, publishing and allied industries	635	90,679	195,536	684,092	213,790	1,952,698	3,930,522	121,080	978,114	1,816,987
Primary metal industries	3,600	49,671	101,270	337,788	9,168	510,591	1,345,320	84,045	606,958	1,039,238
Metal fabricating industries (except machinery and transportation equipment industries)	407	88,839	185,556	680,780	170,690	2,025,371	3,918,348	116,345	958,507	1,808,878
Machinery industries (except electrical machinery)	4,067	107,156	228,670	724,514	34,419	1,630,684	3,357,086	140,701	1,020,409	1,788,556
Transportation equipment industries	851	47,457	99,800	334,123	13,037	899,851	1,776,686	80,534	640,960	1,222,695
Electrical products industries	905	105,164	221,993	787,781	39,338	3,804,026	5,757,285	146,979	1,208,545	2,194,927
Non-metallic mineral products industries	736	75,551	157,031	451,711	19,592	1,355,731	2,671,736	121,054	850,241	1,422,442
Petroleum and coal products industries	1,280	36,045	78,134	244,200	73,952	1,456,694	1,264,629	49,428	361,364	750,869
Chemical and chemical products industries	94	6,686	14,856	64,765	19,178	1,452,565	1,819,127	15,647	160,653	360,634
Miscellaneous manufacturing industries	1,128	40,086	85,471	279,834	104,708	1,157,262	2,620,835	79,070	637,157	1,493,749
Total	2,337	39,960	83,623	209,747	9,698	458,487	1,037,691	56,749	348,987	659,172
	31,928	1,167,063	2,450,058	7,232,256	903,264	25,699,999	46,380,935	1,637,001	11,363,712	21,417,748

¹ Data compiled according to the 1970 revision of the Standard Industrial Classification.

17.8 Summary statistics of manufactures, by province, 1969 and 1970

Province or territory and year	Estab-lish-ments No.	Manufacturing activity			Cost of fuel elec- tricity \$'000	Cost of materials and supplies \$'000	Value of shipments of goods of own manu- facture \$'000	Value added \$'000	Total activity		Total value added \$'000
		Production and related Number	Man- hours paid '000	workers Wages \$'000					Total employees Number	Salaries and wages \$'000	
Newfoundland	1969 1970	259 252	9,941 10,641	21,459 23,007	48,892 55,663	11,580 13,458	116,353 128,671	242,386 263,304	112,522 123,624	65,325 72,219	120,537 136,079
Prince Edward Island	1969 1970	148 150	2,070 2,207	4,245 4,462	7,075 8,001	1,018 1,022	37,884 41,955	18,468 62,680	2,606 2,698	9,746 10,681	19,726 21,793
Nova Scotia	1969 1970	846 818	25,741 24,641	53,469 51,580	116,142 121,568	18,347 17,882	419,168 437,609	731,475 757,992	33,229 31,812	165,640 172,704	315,736 318,484
New Brunswick	1969 1970	628 612	22,146 22,148	47,000 46,762	104,217 112,228	26,494 28,312	413,997 437,950	708,939 730,223	28,984 28,751	148,206 158,281	283,782 283,364
Quebec	1969 1970	10,466 10,176	379,869 369,896	806,540 783,775	1,991,387 2,057,512	255,434 264,849	6,975,374 7,072,888	12,810,214 13,083,969	529,027 514,150	3,166,701 3,285,035	5,967,988 6,091,819
Ontario	1969 1970	12,971 12,736	574,694 562,858	1,219,491 1,182,424	3,549,819 3,711,437	387,241 417,851	13,100,271 13,226,000	23,847,773 24,009,636	825,462 806,638	5,660,929 5,942,507	11,523,267 11,459,488
Manitoba	1969 1970	1,381 1,350	35,802 35,553	74,944 74,023	182,763 194,259	25,337 26,335	725,409 745,381	1,230,020 1,260,416	49,439 48,707	277,380 294,625	507,048 522,667
Saskatchewan	1969 1970	748 737	9,889 10,139	20,913 21,474	58,686 64,361	12,160 12,413	332,722 342,021	530,443 544,611	15,267 14,703	95,082 97,985	194,956 200,623
Alberta	1969 1970	1,861 1,813	36,199 35,902	76,365 75,458	214,915 230,190	29,314 29,036	1,133,980 1,194,894	1,849,271 1,900,206	52,354 51,331	335,104 356,653	731,863 716,885
British Columbia	1969 1970	3,329 3,253	93,383 92,853	190,439 186,633	646,594 675,556	93,508 92,024	2,125,598 2,067,782	3,917,832 3,760,567	126,449 125,088	922,804 971,301	1,788,218 1,663,113
Yukon Territory	1969 1970	19 16	68 82	142 166	371 432	53 19	638 1,233	1,681 2,356	95 90	528 498	1,136 1,094
Northwest Territories	1969 1970	13 15	85 143	177 292	665 1,049	40 63	2,090 3,616	3,545 4,976	118 160	894 1,222	2,020 2,339
Canada	1969 1970	32,669 31,928	1,189,887 1,167,063	2,515,183 2,450,058	6,921,525 7,232,256	860,525 903,264	25,383,484 25,699,999	45,930,438 46,380,935	1,675,332 1,637,001	10,848,341 11,363,712	21,456,276 21,417,748

17.9 Summary statistics of manufactures, by census metropolitan area, 1969 and 1970

Census metropolitan area and year	Establishments No.	Manufacturing activity			Cost of fuel and electricity \$'000	Cost of materials and supplies \$'000	Value of shipments of goods and services \$'000	Value added \$'000	Total activity		Total value added \$'000
		Number	Man-hours paid '000	Wages \$'000					Total employees Number	Salaries and wages \$'000	
Calgary, Alta.	1969 514	10,970	23,025	67,670	6,498	329,460	543,056	212,579	15,434	101,039	221,267
	1970 510	10,742	22,473	71,138	6,199	326,441	535,652	205,194	14,838	104,744	211,870
Edmonton, Alta.	1969 590	14,798	31,354	90,323	10,549	429,917	735,380	301,588	20,748	134,011	316,160
	1970 584	14,474	30,310	94,820	10,313	431,612	727,439	291,743	20,118	140,772	307,844
Halifax, NS	1969 134	5,246	11,217	27,890	2,952	142,807	234,991	89,590	7,360	42,950	94,218
	1970 128	4,717	9,931	27,370	2,624	148,439	237,610	88,721	6,687	41,803	89,278
Hamilton, Ont.	1969 697	49,317	103,675	328,623	41,575	997,915	2,015,253	990,804	65,063	463,585	1,015,436
	1970 681	51,447	106,801	375,167	47,099	1,122,692	2,223,787	1,079,004	66,807	518,717	1,103,487
Kitchener, Ont.	1969 514	33,324	69,910	183,693	11,027	526,858	1,011,343	490,383	43,462	261,427	500,256
	1970 509	32,116	66,196	188,818	11,787	532,704	1,017,221	490,887	42,055	271,073	499,833
London, Ont.	1969 330	14,498	30,473	85,234	5,730	298,328	605,632	310,335	20,912	136,059	333,518
	1970 321	13,626	28,409	84,953	5,710	303,134	604,524	288,685	19,643	136,998	315,029
Montreal, Que.	1969 5,429	198,860	418,133	1,051,202	61,944	3,611,211	6,675,557	3,031,577	273,760	1,654,957	3,156,163
	1970 5,243	192,419	403,327	1,080,045	64,183	3,713,491	6,890,574	3,136,477	263,313	1,696,244	3,266,039
Ottawa, Ont.	1969 351	12,161	26,320	74,455	15,867	198,244	408,382	195,674	18,335	121,753	202,448
	1970 332	11,778	25,007	77,313	15,968	206,920	425,654	203,797	17,950	131,193	209,828
Quebec, Que.	1969 521	15,848	32,662	80,797	10,400	246,942	477,532	222,258	21,230	118,528	228,429
	1970 512	15,886	33,184	88,082	10,994	243,216	493,107	239,360	21,173	127,942	246,690
Regina, Sask.	1969 131	2,258	4,679	13,769	1,772	94,908	145,188	49,657	3,670	23,159	51,961
	1970 128	2,209	4,555	14,544	1,725	95,027	150,757	53,390	3,496	24,039	57,240
Saint John, NB	1969 86	5,017	10,506	29,297	6,420	147,647	250,918	96,768	6,653	40,630	99,211
	1970 86	5,133	10,816	31,061	6,377	157,629	241,093	87,964	6,707	42,454	90,316
St. John's, Nfld.	1969 81	1,889	4,129	8,948	1,369	24,918	54,419	27,925	2,752	13,966	29,713
	1970 76	1,824	3,993	9,842	1,591	25,050	57,090	30,613	2,568	14,576	32,342
Saskatoon, Sask.	1969 146	2,862	5,988	16,779	2,606	95,314	149,489	53,319	4,268	25,976	57,353
	1970 142	2,824	5,947	17,948	2,731	104,898	161,409	52,974	4,083	26,676	56,601
Toronto, Ont.	1969 5,779	209,709	444,596	1,257,077	79,799	4,767,082	8,526,180	3,768,665	301,604	2,022,940	4,215,067
	1970 5,684	205,973	432,396	1,300,693	80,180	4,774,579	8,646,668	3,800,755	294,140	2,097,134	4,306,872
Vancouver, BC	1969 1,854	47,449	96,481	317,682	24,773	1,070,448	1,929,237	852,009	64,318	452,521	886,098
	1970 1,846	46,689	94,006	328,448	24,215	1,069,195	1,905,829	821,132	62,356	466,517	854,936
Victoria, BC	1969 219	3,863	7,583	27,154	1,438	70,352	135,274	65,095	5,362	37,680	66,311
	1970 210	3,703	7,383	26,469	1,230	65,385	123,026	57,130	5,037	36,931	58,945
Windsor, Ont.	1969 382	25,424	56,586	208,637	11,713	903,620	1,569,433	660,772	33,460	289,635	697,590
	1970 374	24,571	53,787	221,385	12,866	960,640	1,614,303	654,414	32,345	306,807	708,603
Winnipeg, Man.	1969 972	29,596	61,861	149,847	10,773	612,180	1,014,950	397,346	39,977	221,205	417,074
	1970 957	29,274	60,864	158,831	10,755	614,995	1,029,794	409,1361	39,305	234,023	428,132

17.10 Establishments in the manufacturing industries classified by number employed and by province, 1970

Province or territory	Number employed									Total
	Under 5	5 to 14	15 to 49	50 to 99	100 to 199	200 to 499	500 to 999	1,000 to 1,499	1,500 or over	
Newfoundland	102	43	52	23	—	30	—	2	—	252
Prince Edward Island	71	43	—	31	—	5	—	—	—	150
Nova Scotia	273	243	184	61	25	22	—	10	—	818
New Brunswick	185	172	136	47	43	23	—	6	—	612
Quebec	3,154	2,669	2,388	948	565	310	98	27	17	10,176
Ontario	3,524	3,400	3,043	1,177	817	546	148	36	45	12,736
Manitoba	464	362	292	122	65	34	—	11	—	1,350
Saskatchewan	331	213	129	36	21	7	—	—	—	737
Alberta	651	570	373	117	63	29	—	10	—	1,813
British Columbia	1,212	918	655	195	146	98	19	6	4	3,253
Yukon Territory and Northwest Territories	18	8	—	5	—	—	—	—	—	31
Canada	9,985	8,641	7,280	2,734	1,768	1,078	298	75	69	31,928

17.11 Percentage of manufacturing establishments, by employment size group and by province or region, 1970

Province or region	Establishments with total employment of						All size groups
	Under 5	5 to 14	15 to 49	50 to 99	100 to 199	200 or over	
Atlantic Provinces	34.4	27.3	21.6	7.5	5.0	4.1	100.0
Quebec	31.0	26.2	23.5	9.3	5.6	4.4	100.0
Ontario	27.7	26.7	23.9	9.2	6.4	6.1	100.0
Prairie Provinces	37.1	29.4	20.4	7.1	3.8	2.3	100.0
British Columbia, Yukon Territory and Northwest Territories	37.5	28.2	20.1	6.0	4.4	3.9	100.0
Canada	31.3	27.1	22.8	8.6	5.5	4.8	100.0

17.12 Number of establishments in manufacturing industries, by industry group and employment size group, 1970

Industry group	Establishments with total employment of									Total
	Under 5	5 to 14	15 to 49	50 to 99	100 to 199	200 to 499	500 to 999	1,000 to 1,499	1,500 or over	
Food and beverage industries	1,756	1,868	1,247	421	274	166	37	5	4	5,778
Tobacco products industries	—	3	5	—	7	—	—	14	—	29
Rubber and plastics products industries	116	—	—	468	—	—	—	38	—	622
Leather industries	87	97	140	—	—	163	—	—	—	487
Textile industries	191	251	230	100	70	66	16	—	7	931
Knitting mills	—	83	95	67	44	—	—	29	—	318
Clothing industries	401	481	743	310	—	—	—	249	—	2,184
Wood industries	1,390	822	687	223	137	—	—	71	—	3,330
Furniture and fixture industries	1,165	458	358	130	74	21	3	—	—	2,209
Paper and allied industries	44	80	175	96	—	175	45	12	8	635
Printing, publishing and allied industries	1,527	1,132	603	196	77	45	—	20	—	3,600
Primary metal industries	42	—	180	57	45	41	21	—	21	407
Metal fabricating industries (except machinery and transportation equipment industries)	1,122	1,250	1,055	—	511	102	23	—	4	4,067
Machinery industries (except electrical machinery)	—	344	243	—	238	—	19	—	7	851
Transportation equipment industries	220	216	208	81	73	55	27	—	25	905
Electrical products industries	—	224	175	—	204	80	30	—	23	736
Non-metallic mineral products industries	—	741	339	87	74	27	—	12	—	1,280
Petroleum and coal products industries	11	24	19	10	16	10	4	—	—	94
Chemical and chemical products industries	239	—	591	127	83	65	18	—	5	1,128
Miscellaneous manufacturing industries	1,057	636	—	533	65	38	—	8	—	2,337
All manufacturing industries	9,985	8,641	7,280	2,734	1,768	1,078	298	75	69	31,928

17.13 Establishments and shipments in the manufacturing industries, by shipments per establishment, 1961 and 1970

Value group	1961	Value of shipments of goods of own manufacture \$'000	Average per establishment \$'000	Proportion of total shipments %	1970	Value of shipments of goods of own manufacture \$'000	Average per establishment \$'000	Proportion of total shipments %
	Estab-lish-ments No.				Estab-lish-ments No.			
Under \$25,000	9,245	106,779	12	0.5	4,548	60,722	13	0.1
\$25,000 but under \$50,000	4,677	168,079	36	0.7	3,810	138,309	36	0.3
50,000 " " 100,000	4,562	328,307	72	1.4	4,324	312,031	72	0.7
100,000 " " 200,000	4,260	610,675	143	2.6	4,258	616,160	145	1.3
200,000 " " 500,000	4,555	1,462,027	321	6.2	5,289	1,706,683	323	3.7
500,000 " " 1,000,000	2,400	1,689,457	704	7.2	3,337	2,370,126	710	5.1
1,000,000 " " 5,000,000	2,875	6,123,965	2,130	26.1	4,673	10,297,881	2,204	22.2
5,000,000 and over	783	12,949,667	16,539	55.3	1,689	30,879,023	18,282	66.6
Total and average	33,357	23,438,956	703	100.0	31,928	46,380,935	1,453	100.0

17.14 Establishments in the manufacturing industries, by value of shipments of goods of own manufacture and by province, 1970

Province or territory	Up to \$24,999	\$25,000 to \$99,999	\$100,000 to \$499,999	\$500,000 to \$999,999	\$1,000,000 to \$4,999,999	\$5,000,000 or over	Total
Newfoundland	72	45	55	29	—	51	252
Prince Edward Island	43	32	45	—	30	—	150
Nova Scotia	172	226	233	79	85	23	818
New Brunswick	102	166	167	59	90	28	612
Quebec	1,483	2,555	3,085	1,120	1,454	479	10,176
Ontario	1,440	3,003	3,899	1,405	2,139	850	12,736
Manitoba	236	369	372	134	196	43	1,350
Saskatchewan	170	251	187	53	58	18	737
Alberta	262	538	571	169	198	75	1,813
British Columbia, Yukon Territory and Northwest Territories	568	949	933	—	672	162	3,284
Canada	4,548	8,134	9,547	3,337	4,673	1,689	31,928

17.15 Establishments and employment in the manufacturing industries, by number employed per establishment, 1949, 1955, 1961 and 1970

Size group	Estab-lish-ments No.	Em-ployees No.	Working owners and partners No.	Pro-portion of total employ-ment ¹ %	Estab-lish-ments No.	Em-ployees No.	Working owners and partners No.	Pro-portion of total employ-ment ¹ %
	1949				1955 ²			
Under 5 employed	16,647	34,865	3.0	17,602	36,340	2.8		
5- 14 " "	9,133	75,482	6.4	9,864	81,471	6.3		
15- 49 " "	5,967	159,012	13.6	6,340	169,575	13.1		
50- 99 " "	1,905	132,069	11.3	2,082	144,411	11.1		
100- 199 " "	1,114	156,084	13.3	1,175	163,091	12.6		
200- 499 " "	694	213,130	18.2	739	227,667	17.5		
500- 999 " "	332	391,455	33.4	243	167,720	12.9		
1,000-1,499 " "				76	91,840	7.1		
1,500 or more " "				61	200,413	15.4		
Head offices	—	9,110	0.8	—	15,933	1.2		
Total	35,792	1,171,207	100.0	38,182	1,298,461	100.0		
	1961				1970			
Under 5 employed	12,352	16,846	10,675	2.0	9,985	14,166	7,727	1.3
5- 14 " "	9,134	71,207	5,150	5.6	8,641	71,680	2,563	4.5
15- 49 " "	6,829	184,550	1,055	13.6	7,280	198,096	406	12.1
50- 99 " "	2,445	169,319	88	12.4	2,734	190,461	27	11.6
100- 199 " "	1,377	190,540	17	13.9	1,768	248,899	22	15.1
200- 499 " "	869	261,628	4	19.1	1,078	327,248	15	19.9
500- 999 " "	243	169,392	—	12.3	298	204,082	—	12.4
1,000-1,499 " "	55	68,743	—	5.0	75	91,322	—	5.5
1,500 or more " "	53	165,577	—	12.1	69	213,066	—	12.9
Head offices ³	—	54,733	—	4.0	—	77,981	—	4.7
Total	33,357	1,352,535	16,989	100.0	31,928	1,637,001	10,760	100.0

¹ Includes working owners and partners.

² Newfoundland included from 1955.

³ Not comparable with years prior to 1961 when coverage of head offices was incomplete.

17.16 Trends in domestic exports of manufactures, 1961-72 (million dollars)

Year	Fabricated materials	End products	Total manufactured goods
1961	2,916.4	706.4	3,622.9
1965	3,923.5	1,606.3	5,529.8
1966	4,217.0	2,455.1	6,672.1
1967	4,417.3	3,476.5	7,893.7
1968	5,027.9	4,702.4	9,730.4
1969	5,344.9	5,792.5	11,137.4
1970	6,083.4	6,010.1	12,093.5
1971	6,020.1	6,616.3	12,636.4
1972	6,745.4	7,570.2	14,315.6

17.17 Concentration in the forty leading industries¹, by value of manufacturing shipments, 1968 (ranked according to shipments concentration)

Industry	Number of		Percentage of industry total accounted for by four enterprises with largest manufacturing shipments				
	Enterprises	Establishments	Enterprises	Manufacturing shipments	Total employees	Salaries and wages	Value added total activity
Tobacco products manufacturers	13	19	52.6	95.5	90.4	93.0	95.6
Breweries	10	47	76.6	94.8	93.4	94.5	95.7
Motor vehicle manufacturers	18	21	28.6	94.6	89.9	92.8	96.1
Distilleries	14	25	48.0	86.4	81.5	82.2	89.1
Cotton yarn and cloth mills	15	34	58.8	85.4	82.0	83.6	83.4
Petroleum refining	14	41	68.3	78.1	82.4	82.9	80.0
Smelting and refining	14	24	54.2	77.6	75.8	76.6	82.1
Iron and steel mills	33	43	18.6	76.9	73.5	76.3	80.8
Manufacturers of electrical wire and cable	19	32	50.0	70.1	67.3	71.9	71.2
Aircraft and parts manufacturers	82	85	4.7	69.1	63.8	66.3	67.8
Communications equipment manufacturers	173	192	6.8	56.8	51.7	55.7	56.0
Manufacturers of electrical industrial equipment	123	157	11.5	56.0	55.7	60.8	60.4
Slaughtering and meat processors	395	433	6.9	55.0	50.5	54.1	50.9
Manufacturers of major electrical appliances	27	31	22.6	50.2	42.8	46.0	51.1
Synthetic textile mills	62	81	13.6	50.1	44.7	49.7	57.0
Motor vehicle parts and accessories manufacturers	157	179	6.7	49.0	40.9	51.2	48.4
Fabricated structural metal industry	93	116	16.4	45.1	49.7	51.8	53.4
Wire and wire products manufacturers	208	230	5.7	43.9	35.8	38.9	37.1
Soft drink manufacturers	384	441	9.3	43.4	38.0	42.8	43.6
Fruit and vegetable canners and preservers	240	295	8.1	38.4	35.2	39.5	40.2
Metal stamping, pressing and coating industry	681	734	4.2	36.5	21.4	26.3	29.5
Fish products industry	289	367	10.1	34.9	30.7	36.3	35.0
Manufacturers of industrial chemicals	76	139	9.4	34.2	33.4	35.8	36.0
Pulp and paper mills	60	137	24.1	33.7	33.6	33.6	35.1
Miscellaneous food industries	240	275	7.3	33.0	22.5	24.3	35.4
Publishing and printing	635	684	2.5	32.3	27.7	30.7	31.7
Bakeries	2,066	2,135	2.5	30.7	27.0	33.8	31.9
Miscellaneous paper converters	180	214	7.0	29.9	23.9	25.0	28.5
Feed manufacturers	730	872	7.2	29.3	19.6	23.9	26.5
Manufacturers of pharmaceuticals and medicines	146	151	5.3	28.0	21.6	24.4	29.5
Dairy factories	805	1,037	5.2	22.6	23.3	27.1	24.7
Sawmills and planing mills	1,802	1,894	1.1	22.1	16.3	20.7	20.0
Plastics fabricators, n.e.s.	461	480	1.7	20.5	18.8	20.0	20.2
Miscellaneous metal fabricating industries	468	487	2.7	18.1	16.0	17.0	18.9
Miscellaneous machinery and equipment manufacturers	590	609	1.1	16.3	17.0	18.2	16.8
Commercial printing	2,045	2,088	1.1	15.0	13.5	15.1	15.6
Men's clothing factories	459	483	1.7	11.7	14.2	13.5	13.0
Household furniture industry	1,723	1,734	0.5	10.3	10.2	10.8	10.2
Women's clothing factories	617	642	2.0	7.7	7.7	6.9	6.7

¹ One industry, rubber tire and tube manufacturers, has been deleted because the concentration ratio is confidential under the Statistics Act.

17.18 Degree of concentration of shipments in the leading four enterprises of 171 individual industries, by industry group, 1968

Industry group	Number of industries	Average concentration ¹ %	Number of industries with specified percentage of shipments by largest four enterprises			
			75-100%	50-74.9%	25-49.9%	0-24.9%
Food and beverage industries	19	50.41 ²	7	3	8	1
Tobacco products industries	2	3	2	—	—	—
Rubber industries	3	69.14	2	—	—	—
Leather industries	5	29.32	1	1	1	2
Textile industries	17	57.62	5	5	7	—
Knitting mills	2	16.24	—	—	—	2
Clothing industries	10	14.23	—	2	3	2
Wood industries	10	28.50	1	4	2	2
Furniture and fixture industries	4	16.09	—	—	—	—
Paper and allied industries	6	35.78	—	2	4	—
Printing, publishing and allied industries	4	24.05	—	—	2	2
Primary metal industries	7	74.81	5	—	2	—

17.18 Degree of concentration of shipments in the leading four enterprises of 171 individual industries, by industry group, 1968 (concluded)

Industry group	Number of industries	Average concentration ¹ %	Number of industries with specified percentage of shipments by largest four enterprises			
			75-100 %	50-74.9 %	25-49.9 %	0-24.9 %
Metal fabricating industries (except machinery and transportation equipment industries)	9	30.27	—	1	4	4
Machinery industries (except electrical machinery)	4	32.34	1	2	—	1
Transportation equipment industries	8	72.28	3	2	1	2
Electrical products industries	8	55.46	1	5	2	—
Non-metallic mineral products industries	15	57.67	7	4	1	3
Petroleum and coal products industries	3	77.67	2	—	1	—
Chemical and chemical products industries	10	43.41	2	3	4	1
Miscellaneous manufacturing industries	25	40.00	4	11	7	3
Total, all industries	171	47.82	43	45	53	30

¹ Weighted average of percentages indicating, for individual industries, the percentage of shipments accounted for by the industries' largest four enterprises.

² Excluding one industry for which data are confidential.

³ Confidential.

17.19 Selected statistics for groupings of the one hundred largest enterprises, by manufacturing value added, 1965 and 1968

Enterprise rank	Item		Value of manufacturing shipments		Value added		Total activity \$'000,000
	Enter-prises No.	Estab-lishments No.	\$'000,000	%	Manufacturing activity \$'000,000	%	
1965							
First 4	4	116	2,856	8.4	1,146	7.7	1,231
5th- 8th	4	42	1,646	4.9	645	4.3	692
9th- 12th	4	53	1,324	3.9	527	3.5	581
13th- 16th	4	153	1,207	3.6	432	2.9	451
17th- 20th	4	97	785	2.3	396	2.7	408
21st- 25th	5	50	856	2.5	442	2.9	472
26th- 50th	25	343	3,106	9.2	1,394	9.4	1,429
51st-100th	50	410	3,528	10.4	1,530	10.2	1,675
All manufacturing enterprises	30,394	33,310	33,889	100.0	14,928	100.0	15,785
1968							
First 4	4	39	4,226	10.0	1,417	7.7	1,641
5th- 8th	4	70	1,650	4.0	807	4.4	892
9th- 12th	4	148	1,513	3.6	589	3.2	611
13th- 16th	4	143	1,435	3.4	468	2.6	484
17th- 20th	4	27	719	1.7	411	2.2	425
21st- 25th	5	64	783	1.8	459	2.5	462
26th- 50th	25	285	3,700	8.8	1,601	8.8	1,660
51st-100th	50	486	4,453	10.6	1,916	10.4	2,137
All manufacturing enterprises	29,281	32,643	42,062	100.0	18,332	100.0	19,484
	Total employees				Total activity value added per		Average number of 3-digit industries per enterprise
	'000	%	Manu- facturing production workers '000	Employee \$	Enterprise \$'000,000	Establish- ment \$'000,000	
1965							
First 4	82.2	5.2	60.3	15,000	308	11	9.0
5th- 8th	53.6	3.4	39.2	12,900	173	16	5.8
9th- 12th	45.5	2.9	29.1	12,800	145	11	5.5
13th- 16th	43.9	2.8	29.0	10,300	113	3	12.0
17th- 20th	34.9	2.2	24.2	11,700	102	4	7.3
21st- 25th	44.1	2.8	31.2	10,700	94	9	5.2
26th- 50th	104.3	6.6	73.1	13,700	57	4	4.8
51st-100th	134.0	8.5	93.9	12,500	34	4	3.3
All manufacturing enterprises	1,570.3	100.0	1,115.9	10,100	0.5	0.5	..
1968							
First 4	75.1	4.6	55.9	21,900	410	42	5.8
5th- 8th	66.3	4.0	41.3	13,500	223	13	6.8
9th- 12th	40.4	2.5	26.7	15,100	153	4	10.5
13th- 16th	44.3	2.7	33.1	10,900	121	3	10.5
17th- 20th	33.4	2.0	20.2	12,700	106	16	4.8
21st- 25th	21.4	1.3	15.0	21,600	92	7	3.0
26th- 50th	109.1	6.6	71.5	15,200	66	6	4.6
51st-100th	161.6	9.8	105.7	13,200	43	4	3.6
All manufacturing enterprises	1,642.4	100.0	1,160.2	11,900	0.7	0.6	..

17.20 Retail trade, by kind of business and by province, 1966-72

Kind of business and province	1966 \$'000,000	1970 \$'000,000	1971 \$'000,000	1972 ¹ \$'000,000	Percentage change 1971-72	Percentage change 1966-72
Kind of business						
Grocery and combination stores	5,351.6	6,849.2	7,260.2	7,890.1	+8.7	+47.4
All other food stores	553.7	640.1	654.2	717.7	+9.7	+29.6
Department stores	1,973.7	2,852.3	3,197.3	3,687.9	+15.3	+86.8
General merchandise stores	644.7	848.5	938.8	1,023.6	+9.0	+58.8
General stores	557.9	575.2	616.5	678.0	+10.0	+21.5
Variety stores	494.2	552.9	570.7	613.4	+7.5	+24.1
Motor vehicle dealers	4,337.8	4,197.2	4,924.6	5,662.9	+15.0	+30.5
Service stations and garages	1,873.5	2,530.7	2,694.9	2,892.1	+7.3	+54.3
Men's clothing stores	357.4	446.0	475.6	508.3	+6.9	+42.2
Women's clothing stores	435.1	561.4	621.8	672.5	+8.2	+54.6
Family clothing stores	337.5	397.5	423.8	458.1	+8.1	+35.7
Shoe stores	252.0	327.5	345.7	363.4	+5.1	+44.2
Hardware stores	355.8	382.8	408.9	447.9	+9.6	+25.9
Furniture, TV and appliance stores	739.8	847.4	942.3	1,069.0	+13.4	+44.4
Fuel dealers	475.2	473.1	523.3	579.0	+10.6	+21.8
Drug stores	649.8	840.0	907.0	980.8	+8.1	+50.9
Jewellery stores	191.6	218.5	236.0	262.9	+11.4	+37.2
All other stores	3,104.9	4,493.6	4,917.7	5,422.2	+10.2	+74.6
Canada	22,686.4	28,033.9	30,659.3	33,929.7	+10.7	+49.5
Province						
Newfoundland	405.6	493.4	533.4	603.6	+13.2	+48.8
Prince Edward Island	107.6	131.5	141.0	154.5	+9.5	+43.6
Nova Scotia	753.0	930.0	1,022.9	1,132.5	+10.7	+50.4
New Brunswick	594.8	740.5	835.6	918.2	+9.9	+54.4
Quebec	5,882.1	7,074.1	7,681.8	8,485.5	+10.5	+44.3
Ontario	8,625.4	10,885.0	11,882.6	13,014.2	+9.5	+50.8
Manitoba	1,006.5	1,227.2	1,319.7	1,470.0	+11.4	+46.1
Saskatchewan	1,046.6	1,018.4	1,139.8	1,274.9	+11.9	+21.8
Alberta	1,758.1	2,274.0	2,469.1	2,779.6	+12.6	+58.1
British Columbia ²	2,506.6	3,259.8	3,633.4	4,096.7	+12.8	+63.4

¹ Subject to revision.² Includes Yukon Territory and Northwest Territories.**17.21 Sales of chain and independent stores, by kind of business, 1966 and 1972**

Kind of business	Chain stores			Independent stores		
	1966 \$'000,000	1972 ¹ \$'000,000	Per- centage change 1966-72	1966 \$'000,000	1972 ¹ \$'000,000	Per- centage change 1966-72
Grocery and combination stores	2,400.7	4,308.3	+79.4	2,950.9	3,581.8	+21.4
All other food stores	48.4	54.0	+11.5	505.3	663.7	+31.3
Department stores	1,973.7	3,687.9	+86.8	—	—	—
General merchandise stores	481.9	811.9	+68.5	162.8	211.7	+30.0
General stores	90.1	121.4	+34.7	467.8	556.6	+19.0
Variety stores	428.5	515.5	+20.3	65.7	97.8	+48.9
Motor vehicle dealers	67.1	92.0	+37.1	4,270.7	5,571.0	+30.4
Service stations and garages	63.5	217.6	+242.7	1,810.0	2,674.5	+47.8
Men's clothing stores	47.1	81.1	+72.2	310.3	427.2	+37.7
Women's clothing stores	115.3	246.6	+113.9	319.8	425.9	+33.2
Family clothing stores	73.9	124.0	+67.8	263.7	334.1	+26.7
Shoe stores	113.3	180.6	+59.4	138.7	182.8	+31.8
Hardware stores	55.3	81.7	+47.7	300.5	366.3	+21.9
Furniture, TV and appliance stores	141.9	183.9	+29.6	597.9	885.0	+48.0
Fuel dealers	76.2	87.3	+14.6	399.0	491.6	+23.2
Drug stores	87.2	156.7	+79.7	562.6	824.1	+46.5
Jewellery stores	64.5	101.1	+56.7	127.1	161.7	+27.2
All other stores	1,161.0	2,124.9	+83.0	1,943.9	3,297.3	+69.6
Total, all stores	7,489.8	13,176.5	+75.9	15,196.6	20,753.2	+36.5

¹ Subject to revision.**17.22 Percentage change in market share of chain and independent stores, by kind of business, 1966 and 1972**

Kind of business	Chain stores			Independent stores		
	1966	1972 ¹	Change in market share 1966-72	1966	1972 ¹	Change in market share 1966-72
Grocery and combination stores	44.9	54.6	+9.7	55.1	45.4	-9.7
All other food stores	8.7	7.5	-1.2	91.3	92.5	+1.2
Department stores	100.0	100.0	—	—	—	—
General merchandise stores	74.7	79.3	+4.6	25.3	20.7	-4.6
General stores	16.1	17.9	+1.8	83.9	82.1	-1.8
Variety stores	86.7	84.0	-2.7	13.3	16.0	+2.7
Motor vehicle dealers	1.5	1.6	+0.1	98.5	98.4	-0.1
Service stations and garages	3.4	7.5	+4.1	96.6	92.5	-4.1
Men's clothing stores	13.2	16.0	+2.8	86.8	84.0	-2.8

17.22 Percentage change in market share of chain and independent stores, by kind of business, 1966 and 1972 (concluded)

Kind of business	Chain stores			Independent stores		
	1966	1972 ¹	Change in market share 1966-72	1966	1972 ¹	Change in market share 1966-72
Women's clothing stores	26.5	36.7	+ 10.2	73.5	63.3	- 10.2
Family clothing stores	21.9	27.1	+ 5.2	78.1	72.9	- 5.2
Shoe stores	45.0	49.7	+ 4.7	55.0	50.3	- 4.7
Hardware stores	15.5	18.2	+ 2.7	84.5	81.8	- 2.7
Furniture, TV and appliance stores	19.2	17.2	- 2.0	80.8	82.8	+ 2.0
Fuel dealers	16.0	15.1	- 0.9	84.0	84.9	+ 0.9
Drug stores	13.4	16.0	+ 2.6	86.6	84.0	- 2.6
Jewellery stores	33.7	38.5	+ 4.8	66.3	61.5	- 4.8
All other stores	37.4	39.2	+ 1.8	62.6	60.8	- 1.8
Total, all stores	33.0	38.8	+ 5.8	67.0	61.2	- 5.8

¹ Subject to revision.

17.23 Department store sales, by department, 1966 and 1972

Department	Sales		Percentage change 1966-72
	1966 ¹ \$'000	1972 \$'000	
Women's, misses' and children's clothing			
Women's and misses' dresses, housedresses, aprons and uniforms	62,000	91,408	+ 47.4
Women's and misses' coats and suits	48,100	74,247	+ 54.4
Women's and misses' sportswear	76,200	175,109	+ 129.8
Furs	13,400	15,850	+ 18.3
Infants' and children's wear and nursery equipment	55,500	103,028	+ 85.5
Girls' and teenage girls' wear	33,100	58,753	+ 77.5
Lingerie and women's sleepwear	42,800	66,020	+ 54.3
Intimate apparel	33,200	47,542	+ 43.2
Millinery	8,500	11,393	+ 34.0
Women's and girls' hosiery	30,100	49,609	+ 64.8
Women's and girls' gloves, mitts and accessories	35,000	59,463	+ 69.9
Women's, misses' and children's footwear	63,400	107,149	+ 68.9
Total, women's, misses' and children's clothing	501,300	859,571	+ 71.5
Men's and boys' clothing			
Men's clothing	71,500	176,984	+ 147.6
Men's furnishings	102,200	173,182	+ 69.5
Boys' clothing and furnishings	46,400	68,718	+ 48.1
Men's and boys' footwear	30,100	60,707	+ 101.7
Total, men's and boys' clothing	250,200	479,591	+ 91.7
Food and kindred products	101,200	190,318	+ 88.0
Toiletries, cosmetics and drugs	88,800	183,450	+ 106.5
Photographic equipment and supplies	27,700	60,321	+ 117.8
Piece goods	34,600	52,762	+ 52.5
Linens and domestics	58,700	93,291	+ 58.9
Smallwares and notions	21,900	44,983	+ 105.4
China and glassware	30,800	59,213	+ 92.2
Floor coverings	47,600	83,972	+ 76.4
Draperies, curtains and furniture covers	36,200	71,712	+ 98.1
Lamps, pictures, mirrors and all other home furnishings	17,900	36,673	+ 104.9
Furniture	110,600	175,820	+ 59.0
Major appliances	97,200	181,541	+ 86.7
Television, radio and music	80,100	166,271	+ 107.6
Housewares and small electrical appliances	64,400	124,900	+ 93.9
Hardware, paints, wallpaper, etc.	51,400	105,061	+ 104.5
Plumbing, heating and building materials	17,300	35,787	+ 106.9
Jewellery	36,400	67,424	+ 85.2
Toys and games	41,800	81,888	+ 95.9
Sporting goods and luggage	54,400	116,322	+ 113.7
Stationery, books and magazines	50,100	101,016	+ 101.6
Gasoline, oil, auto accessories, repairs and supplies	37,400	81,381	+ 117.6
Receipts from meals and lunches	41,900	79,246	+ 89.1
Receipts from repairs and services	73,826	155,400	+ 110.4
All other departments			
Total, all departments	1,973,726	3,687,914	+ 86.8

¹ Based on extrapolations of original published data.

17.24 Retail sales of new motor vehicles, 1966-72

Year	Passenger cars		Trucks and buses		Total	
	No.	\$'000	No.	\$'000	No.	\$'000
1966	694,820	2,274,083	132,611	550,508	827,431	2,824,591
1967	679,435	2,210,309	135,872	588,057	815,307	2,798,366
1968	741,915	2,481,141	147,538	634,648	889,453	3,115,789
1969	760,803	2,603,835	156,702	719,044	917,505	3,322,879
1970	640,360	2,158,543	133,881	653,787	774,241	2,812,330
1971	780,762	2,737,516	159,570	815,535	940,332	3,553,051
1972	858,959	3,172,676	206,662	1,142,754	1,065,621	4,315,430

17.25 Retail sales of new motor vehicles, by type and source, 1971 and 1972

Type of vehicle and source	Units			Retail value		
	1971 No.	1972 No.	Percentage change 1971-72	1971 \$'000	1972 \$'000	Percentage change 1971-72
Passenger cars	780,762	858,959	+10.0	2,737,516	3,172,676	+15.9
Canadian and US manufacture	592,319	653,933	+10.4	2,225,121	2,554,779	+14.8
Overseas manufacture	188,443	205,026	+8.8	512,395	617,897	+20.6
Trucks and buses	159,570	206,662	+29.5	815,535	1,142,754	+40.1
Canadian and US manufacture	147,001	189,577	+29.0	779,544	1,087,306	+39.4
Overseas manufacture	12,569	17,085	+35.9	35,991	55,448	+54.1
Total, all vehicles	940,332	1,065,621	+13.3	3,553,051	4,315,430	+21.4
Canadian and US manufacture	739,320	843,510	+14.1	3,004,665	3,642,085	+21.2
Overseas manufacture	201,012	222,111	+10.5	548,386	673,345	+22.8

17.26 Vending machine operators, 1966-71

Year	Firms	Machines	Sales \$'000
1966	769	85,880	107,540
1967	790	93,441	119,651
1968	791	98,691	127,059
1969	768	104,078	142,910
1970	768	107,652	156,822
1971	697	101,550	162,249

17.27 Value and percentage distribution of sales by vending machine operators, by product, 1970 and 1971

Product	1970		1971	
	Sales \$'000	% of total	Sales \$'000	% of total
Tobacco products	75,177	47.9	82,090	50.6
Ice cream	326	0.2	401	0.2
Milk and milk products	3,967	2.5	4,236	2.6
Cold drinks				
Vended in bottles, cans or cartons	11,554	7.4	12,390	7.6
Vended in disposable cups	14,967	9.5	13,794	8.5
Hot drinks (coffee, tea, hot chocolate and cup-vended soup)	23,536	15.0	24,108	14.9
Bulk (unwrapped) confectionery	1,537	1.0	1,576	1.0
Packaged confectionery	7,302	4.7	7,022	4.3
Pastries	6,637	4.2	6,784	4.2
Fresh foods (sandwiches, salads, casseroles, hot dogs, etc.)	9,322	5.9	7,290	4.5
Canned hot foods and canned soup	2,159	1.4	2,290	1.4
Other foods (fruit, potato chips, etc.)	339	0.2	268	0.2
Other non-food items				
Total, all products	156,822	100.0	162,249	100.0

17.28 Direct selling by manufacturers and specialist agencies, 1967-71

Commodity	1967 \$'000	1968 \$'000	1969 \$'000	1970 \$'000	1971 \$'000	Percentage change 1967-71
Meat, fish and poultry	6,724	8,040	9,356	10,672	11,612	+72.7
Frozen food plans	23,072	25,572	22,838	19,282	18,062	-21.7
Dairy products	178,152	166,468	163,055	163,870	163,000 ^P	-8.5
Bakery products	64,159	56,400	46,983	42,471	40,000 ^P	-37.6
All other foods and beverages	14,322	14,460	17,129	18,706	18,037	+25.9
Canvas awnings, sails, tents, etc.	4,451	4,587	5,053	5,314	6,437	+44.6
Clothing	14,278	13,661	13,628	13,284	12,981	-9.1
Fur goods	3,370	4,285	5,200	6,115	7,046	+109.1
Furniture, upholstery and repairs	28,100	29,300	32,000	31,000	32,535	+15.8
Books	51,164	52,290	54,295	51,197	53,975	+5.5
Newspapers	97,429	105,847	110,257	120,005	125,581	+28.9
Magazines	9,016	10,110	12,030	14,013	16,348	+81.3
Aluminum windows, doors, screens and awnings	14,520	15,349	17,910	15,656	16,944	+16.6
Dinnerware, kitchenware and utensils	18,432	25,596	24,657	26,863	25,535	+38.5
Sail boats and pleasure craft	5,898	6,857	8,388	8,397	8,799	+49.2
Household electrical appliances	34,617	37,516	39,341	38,154	46,582	+34.6
Pharmaceuticals and medicines	5,219	5,423	5,250	5,964	4,897	-6.2
Brushes, brooms, mops and household soaps and cleaners	17,428	20,398	20,679	22,270	23,471	+34.7
Cosmetics and costume jewellery	57,921	68,822	71,995	77,266	77,744	+34.2
Phonograph records	18,140	16,852	12,617	14,180	14,260	-21.4
Greenhouse flowers and nursery seeds, stocks, etc.	15,065	15,952	19,060	16,643	19,688	+30.7
Miscellaneous ¹	38,066	56,804	60,826	60,819	61,509	+61.6
Total, all commodities	719,543	760,589	772,547	782,141	805,043	+11.9

¹ Includes leather goods, textiles, stamps, coins, personal stationery and mail-order sales to credit-card holders of gasoline oil companies.

17.29 Methods of distribution of direct sales, 1971

Commodity	By door-to-door canvassing %	By mail %	From manufacturers' premises %	Through other channels ¹ %
Meat, fish and poultry	—	—	89	11
Frozen food plans	—	—	100	—
Dairy products	100	—	—	—
Bakery products	100	—	—	—
All other foods and beverages	82	—	18	—
Canvas awnings, sails, tents, etc.	6	—	94	—
Clothing	18	49	33	—
Fur goods	—	—	100	—
Furniture, upholstering and repairs	—	—	100	—
Books	32	67	1	—
Newspapers	88	10	—	2
Magazines	14	86	—	—
Aluminum windows, doors, screens and awnings	52	—	48	—
Dinnerware, kitchenware and utensils	100	—	—	—
Sail boats and pleasure craft	—	—	97	3
Household electrical appliances	72	—	28	—
Pharmaceuticals and medicines	87	5	8	—
Brushes, brooms, mops and household soaps and cleaners	97	1	2	—
Cosmetics and costume jewellery	97	—	3	—
Phonograph records	—	98	2	—
Greenhouse flowers and nursery seeds, stocks, etc.	—	17	83	—
Miscellaneous ²	6	62	32	—
Total, all commodities	65	15	19	1

¹ Includes roadside stands, market stalls, shows, exhibitions and other display and demonstration venues.

² See footnote to Table 17.28.

17.30 Retail sales in campus book stores, academic years ended 1969-72

Province and items sold	1968-69 \$'000	1969-70 \$'000	1970-71 \$'000	1971-72 \$'000	% change 1968-69 to 1971-72
Province					
Atlantic region	2,435	2,826	3,258	3,759	+54.4
Nova Scotia	1,064	1,283	1,417	1,599	+50.3
New Brunswick	935	975	1,094	1,234	+32.0
Quebec	4,334	4,975	6,366	6,895	+59.1
Ontario	12,259	14,505	16,440	18,240	+48.8
Manitoba	1,556	1,822	2,129	2,293	+47.4
Saskatchewan	1,505	1,727	1,690	1,816	+20.7
Alberta	3,197	3,765	4,170	4,327	+35.3
British Columbia	3,573	3,782	3,766	3,584	+0.3
Canada	28,859	33,402	37,819	40,914	+41.8
Items sold					
Text books ¹	19,769	22,179	24,306	27,140	+37.3
Trade books ²	3,290	4,543	4,961	5,383	+63.6
Stationery and supplies	4,011	4,476	5,703	5,673	+41.4
Miscellaneous ³	1,789	2,204	2,849	2,718	+51.9

¹ Includes all professional and educational books.

² Includes both hard covers and paperbacks.

³ Includes newspapers, magazines, periodicals and sundries.

17.31 Sales of wholesale merchants, by kind of business, 1968-72

Kind of business	1968 \$'000,000	1969 \$'000,000	1970 \$'000,000	1971 \$'000,000	1972 ^b \$'000,000	Percentage change 1971-72
Consumer goods trades	10,234	11,139	11,946	12,729	14,149	+11.2
Automotive parts and accessories	1,047	1,190	1,355	1,519	1,721	+13.3
Motor vehicles	453	491	555	627	742	+18.3
Drugs and drug sundries	473	522	612	654	701	+7.2
Clothing and furnishings	249	284	305	308	334	+8.7
Footwear	83	96	81	78	75	-2.9
Other textiles and clothing accessories	440	491	518	588	657	+11.6
Household electrical appliances	460	532	532	600	673	+12.1
Tobacco, confectionery and soft drinks	791	863	941	1,000	1,081	+8.1
Fresh fruits and vegetables	496	517	519	559	607	+8.6
Meat and dairy products	585	717	781	757	872	+15.1
Floor coverings	218	244	237	276	319	+15.5
Groceries and food specialties	3,309	3,526	3,717	3,830	4,223	+10.3
Hardware	553	577	617	638	677	+6.1
Other consumer goods	1,077	1,089	1,176	1,295	1,467	+13.3
Industrial goods trades	10,363	11,336	11,102	12,167	14,018	+15.2
Coal and coke	95	92	69	65	49	-24.6
Grain	1,064	709	893	1,002	1,225	+22.2
Electrical wiring supplies, construction materials, apparatus and equipment	392	397	402	447	527	+17.8

17.31 Sales of wholesale merchants, by kind of business, 1968-72 (concluded)

Kind of business	1968 \$'000,000	1969 \$'000,000	1970 \$'000,000	1971 \$'000,000	1972 ^p \$'000,000	Percentage change 1971-72
Industrial goods trades (concluded)						
Other construction materials and supplies, including lumber	2,572	2,867	2,597	3,115	3,731	+19.8
Farm machinery	848	901	633	793	958	+20.9
Industrial and transportation equipment and supplies	1,788	2,141	2,022	2,223	2,596	+16.8
Commercial, institutional and service equipment and supplies	545	628	565	593	666	+12.4
Newsprint, paper and paper products	394	425	409	421	448	+6.6
Scientific and professional equipment	272	303	324	337	368	+9.1
Iron and steel	810	1,125	1,259	1,306	1,446	+10.7
Junk and scrap	380	448	522	424	440	+3.6
Other industrial goods	1,203	1,300	1,407	1,441	1,564	+8.5
Total, all trades	20,597	22,475	23,048	24,896	28,167	+13.1

17.32 Sales of farm implements and equipment, by province and by major group, 1968-72¹

Province and major group	1968 \$'000	1969 \$'000	1970 \$'000	1971 \$'000	1972 ^p \$'000	Percentage change 1971-72
Province						
Atlantic Provinces	11,727	11,808	11,051	9,778	10,269	+5.0
Quebec	49,428	53,449	46,591	45,526	56,496	+24.1
Ontario	89,124	92,832	83,183	90,055	114,274	+26.9
Manitoba	44,451	34,719	28,436	30,736	37,705	+22.7
Saskatchewan	92,103	68,402	51,566	71,897	99,848	+38.9
Alberta	80,571	71,724	50,354	68,358	86,669	+26.8
British Columbia	10,727	11,375	7,799	9,815	13,290	+35.4
Total	378,131	344,309	278,981	326,165	418,551	+28.3
Major group						
Tractors and engines	128,829	118,631	102,597	117,370	..	..
Ploughs	15,967	10,903	7,480	9,534	..	..
Tilling, cultivating and weeding machinery	28,687	22,463	15,380	19,395	..	..
Planting, seeding and fertilizing machinery	19,134	16,440	12,948	16,402	..	..
Haying machinery	26,397	23,231	21,272	21,819	..	..
Harvesting machinery	99,042	69,156	52,058	68,182	..	..
Machines for preparing crops for market or for use	14,895	18,849	15,518	18,168	..	..
Farm wagons, boxes and sleighs	7,258	8,784	8,274	10,821	..	..
Barn equipment	12,702	19,540	15,910	14,374	..	..
Farm dairy machinery and equipment	8,441	10,598	6,470	7,083	..	..
Spraying and dusting equipment	3,716	4,397	2,399	2,538	..	..
Pumps and irrigation equipment and miscellaneous farm equipment	13,063	21,317	18,673	20,479	..	..

¹ Data are based on a commodity survey and therefore exclude sales of repair parts and other products and receipts from secondary activities, including repairs, carried out by respondents. The figures are not comparable with those given in Table 17.31.

17.33 Percentage change in hotel receipts, by province, 1968-72

Province	1968-69	1969-70	1970-71	1971-72	1968-72
Newfoundland	} +2.4	+0.8	+10.4	+9.1	+24.3
Prince Edward Island					
Nova Scotia	+10.4	+4.6	+9.0	+5.3	+32.6
New Brunswick	+3.3	+6.9	+5.4	+8.8	+26.6
Quebec	+12.0	+4.8	+8.4	+9.1	+38.9
Ontario	+8.5	+3.5	+5.1	+4.8	+23.7
Manitoba	+8.0	+6.3	-4.9	+9.5	+19.6
Saskatchewan	+1.6	+0.7	+8.8	+12.3	+25.0
Alberta	+14.9	+10.9	+8.0	+8.4	+49.2
British Columbia ¹	+9.8	+5.8	+6.0	+10.8	+36.5
Canada	+9.9	+5.2	+6.1	+7.9	+32.4

¹ Includes Yukon Territory and Northwest Territories.

17.34 Restaurant receipts, by province, 1968-72

Province	1968 \$'000	1969 \$'000	1970 \$'000	1971 \$'000	1972 \$'000	% change 1968-72
Newfoundland	10,541	10,333	10,813	11,987	13,069	+24.0
Prince Edward Island	3,385	3,211	3,153	3,191	3,208	-5.2
Nova Scotia	28,337	29,093	30,183	31,267	33,981	+19.9
New Brunswick	22,643	24,149	24,380	25,756	28,005	+23.7
Quebec	395,228	405,358	411,597	439,376	481,131	+21.7
Ontario	405,880	409,306	423,176	446,697	483,234	+19.1
Manitoba	53,582	56,491	57,173	59,084	63,369	+18.3
Saskatchewan	42,009	38,428	35,320	36,198	38,486	-8.4
Alberta	92,893	100,154	102,901	105,327	107,765	+16.0
British Columbia ¹	111,613	121,926	120,084	127,358	134,359	+20.4
Canada	1,166,111	1,198,449	1,218,780	1,286,241	1,386,607	+18.9

¹ Includes Yukon Territory and Northwest Territories.

17.35 Summary statistics of motion picture theatre operations, 1969 and 1970

Item		1969			1970		
		Regular	Drive-in	Total	Regular	Drive-in	Total
Establishments	No.	1,157	271	1,428	1,156	279	1,435
Receipts from admissions	\$'000	102,363	15,658	118,020	111,692	17,047	128,738
Amusement taxes	"	7,485	1,033	8,519	8,111	1,118	9,228
Paid admissions	'000	78,918	11,308	90,226	80,826	11,489	92,315
Employees							
Male	No.	5,949	1,543	7,492	5,850	1,470	7,320
Female	"	5,040	1,367	6,407	4,775	1,296	6,071
Salaries and wages	\$'000	22,918	3,866	26,784	25,545	4,511	30,056

17.36 Summary statistics of film exchanges, 1967-70

Item		1967	1968	1969	1970
Companies	No.	57	56	52	53
Exchange offices	"	116	120	117	112
Average employees					
Male	No.	376	351	393	345
Female	"	387	410	453	392
Salaries and wages					
Male	\$	3,196,152	3,149,205	3,507,470	3,489,109
Female	\$	1,471,448	1,584,594	1,746,953	1,816,300
Receipts					
Film rentals	\$	56,099,098	64,186,740	61,788,467	65,582,753
Sale of advertising	\$	34,494	25,893	24,370	52,856
Other sources	\$	417,647	440,585	996,770	499,812

17.37 Summary statistics of power laundries and dry-cleaning and dyeing plants, by source of receipts and by province, 1968-70

Item		Power laundries			Dry-cleaning and dyeing plants		
		1968	1969 ¹	1970	1968	1969 ¹	1970
Plants	No.	378	..	359	2,176	..	2,197
Employees	"	13,734	..	11,795	20,754	..	17,429
Male	"	4,663	..	4,136	7,245	..	6,014
Female	"	9,071	..	7,659	13,509	..	11,415
Salaries and wages	\$'000	50,312	53,737	50,102	74,294	74,036	68,657
Cost of materials and supplies	"	8,660	9,033	7,113	17,668	17,890	16,262
Receipts	\$'000	108,715	111,310 ²	107,773	161,914	164,669 ²	152,323
Laundry	"	39,313	37,734 ²	35,561	26,255	24,371 ²	20,775
Cleaning	"	13,139	13,691 ²	11,773	124,120	130,254 ²	122,194
Rental services	"	50,622	53,874 ²	55,531	1,357	1,811 ²	1,091
All others	"	5,641	6,011 ²	4,908	10,182	8,233 ²	8,263
Province	\$'000	108,715	111,310 ²	107,773	161,914	164,669 ²	152,323
Newfoundland	"	..	..	..	1,779	..	1,817
Prince Edward Island	"	726	..	488	544	..	507
Nova Scotia	"	1,420	..	1,915	5,192	..	4,539
New Brunswick	"	1,888	..	1,534	3,071	..	2,914
Quebec	"	28,420	..	24,795	38,710	..	36,979
Ontario	"	44,785	..	49,519	70,554	..	65,584
Manitoba	"	3,529	..	3,486	7,790	..	7,822
Saskatchewan	"	1,940	..	1,828	5,507	..	4,671
Alberta	"	8,828	..	8,667	13,293	..	12,536
British Columbia ³	"	17,179	..	15,542	15,473	..	14,954

¹ The 1969 survey of power laundries and dry-cleaning and dyeing plants utilized a sampling approach; as a result, some of the information presented in earlier years was not available for 1969.

² Based on a percentage distribution of total receipts.

³ Includes Yukon Territory and Northwest Territories.

17.38 Summary statistics of advertising agencies, 1967-70

Item		1967	1968	1969	1970
Firms	No.	176	171	163	194
Employees	"	5,138	4,919	4,876	4,850
Male	"	2,618	2,511	2,502	2,497
Female	"	2,520	2,408	2,374	2,353
Salaries and wages	\$'000	44,034	44,651	46,629	49,209
Billings	"	429,595	426,145	456,143	470,352
Advertising billings	"	420,092	416,628	450,332	462,732
Production work	"	4,753	5,185		
Market surveys, etc.	"	4,749	4,332		
Gross revenue	"	72,835	72,476	5,810	7,620
Advertising billings	"	63,118	62,649	78,874	82,896
All other sources	"	9,716	9,828	73,225 ¹	78,067 ¹
Net revenue	"	6,020	4,744	5,649	4,829
				9,389	7,670

¹ Gross revenue on production work done by agency staff now included under "advertising billings" rather than "all other sources".

17.39 Advertising billings to clients, by medium and by kind of service, 1970

Medium	Media billings \$'000	Production charges \$'000	Total billings \$'000	% distribution (total billings)
Print	159,576	37,168	196,744	42.5
Television	142,380	28,354	170,734	36.9
Radio	56,248	5,825	62,073	13.4
Direct mail, point of purchase, brochures, catalogues, contests, etc.	12,132	1,377	13,509	2.9
Outdoor and transportation	...	17,956	17,956	3.9
Other	...	1,716	1,716	0.4
Total	370,336	92,396	462,732	100.0

17.40 Estimated quarterly inventories of wholesale and retail merchandisers, 1971 and 1972

Kind of business	1971				1972				Percentage change 4th qtr 1971 to 4th qtr 1972
	1st qtr	2nd qtr	3rd qtr	4th qtr	1st qtr	2nd qtr	3rd qtr	4th qtr	
<i>Million dollars</i>									
Wholesale trade	3,414	3,361	3,323	3,378	3,654	3,776	3,763	3,889	+15.1
Consumer goods	1,509	1,496	1,484	1,472	1,556	1,626	1,640	1,675	+13.8
Industrial goods	1,905	1,865	1,839	1,906	2,098	2,150	2,123	2,214	+16.2
Department stores	706	745	731	763	816	858	865	859	+12.6
Women's, misses' and children's clothing	166	163	140	128	187	181	159	141	+10.2
Men's and boys' clothing	114	119	112	100	126	128	117	99	-1.0
Furniture, TV, radio and household appliances	115	125	96	137	140	150	123	159	+16.1
Other departments	311	338	383	398	363	399	466	460	+15.6
Retail chain store groups	912	927	986	939	969	1,002	1,067	1,081	+15.1
Grocery and other food	190	189	190	216	174	181	173	204	-5.6
General merchandise	278	278	294	247	296	303	318	305	+23.5
Automotive	64	77	67	67	72	77	82	84	+25.4
Apparel and accessories	139	133	158	130	156	157	183	154	+18.5
Hardware and home furnishings	60	59	60	62	69	67	64	68	+9.7
Other	179	192	217	217	202	216	249	267	+23.0
<i>Quarter-to-quarter percentage change</i>									
Independent retail stores	+18.2	+2.8	+2.3	+4.1	+3.2	+3.4	+7.8	—	...
Motor vehicle dealers	+24.6	+4.1	+0.9	+6.1	+4.7	-6.9	-12.5	+26.2	...

17.41 Sales finance company new paper purchased and balances outstanding, by class of goods, 1969-72 (million dollars)

Class of goods	Paper purchased				Balances outstanding Dec. 31			
	1969	1970	1971	1972 ^b	1969 ^a	1970 ^a	1971	1972 ^b
Consumer goods	1,181	965	806	952	1,266	983	891	1,035
New passenger cars	659	402	359	444	907	679	{	426 521
Used passenger cars	282	215	177	177				
Radio and television sets, household appliances, furniture and other consumer goods	240	348	269	331	360	305	274	299
Commercial and industrial	752	836	870	1,022	1,098	994	1,053	1,226
New commercial vehicles	251	408	455	482	539	534	{	495 549
Used commercial vehicles	73	76	75	67				
Other commercial goods	428	352	341	473	558	460	486	567
Total	1,933	1,802	1,676	1,974	2,364	1,977	1,943	2,261

^a Revised to include the retail sales financing of consumer loan companies. Passenger cars purchased for commercial use (i.e., car rentals, company fleets, taxis, etc.) have been transferred from the "consumer goods" to the "commercial and industrial" category.

^b Revised to exclude pre-computed unearned finance charges.

17.42 Consumer credit balances outstanding by selected holders, 1963-72 (million dollars)

Year	Retail trade credit	Sales finance and consumer loan companies			Life insurance companies policy loans	Chartered banks and Quebec savings banks ¹	Credit unions and caisses populaires	Public utilities and other credit issuers ²	Total
		Instalment financing of consumer goods only	Cash loans under the Small Loans Act (under \$1,500)	Other cash loans					
1963	1,169	929	530	225	385	1,446	614	54	5,351
1964	1,235	1,089	575	275	398	1,808	705	170	6,254
1965	1,313	1,198	628	348	411	2,257	813	188	7,157
1966	1,353	1,258	648	441	450	2,474	937	218	7,778
1967	1,385	1,183	636	589	486	2,997	1,094	246	8,616
1968	1,440	1,221	619	798	553	3,697	1,247	283	9,856
1969	1,529	1,371	596	1,079	660	4,181	1,401	317	11,134
1970	1,551	1,136	525	1,190	759	4,685	1,493	367	11,706
1971	1,617	891	440	1,036	784	5,802	1,690	424	12,684
1972	1,781	1,035	384	1,241	800	7,174	2,000	454	14,870

¹ Includes personal loans other than secured loans, home improvement loans and mortgages.² Includes balances owing to telephone, gas and electric power companies, as well as to such credit issuers as oil companies, airlines, automobile rental agencies and travel and entertainment businesses.

17.43 Retail credit outstanding, by kind of business, 1969-72 (million dollars)

Kind of business	1969	1970	1971	1972	% change 1971-72
Grocery and all other food stores	61.4	57.5	51.5	57.3	+11.3
Department stores	704.5	720.0	754.3	823.3	+9.1
General merchandise stores	22.1	20.2	23.0	22.8	-0.9
General stores	43.7	48.3	49.2	48.3	-1.8
Variety stores	27.0	27.5	32.9	41.5	+26.1
Motor vehicle dealers	61.0	56.9	64.7	72.1	+11.4
Service stations and garages	63.5	64.6	60.4	69.4	+14.9
All other automotive businesses	62.7	72.1	76.6	82.6	+7.8
Men's clothing stores	33.1	37.1	38.5	43.3	+12.5
Women's clothing stores	30.5	29.6	30.2	32.5	+7.6
Family clothing stores	38.7	37.3	35.8	41.4	+15.6
All other apparel and accessories stores	16.7	17.1	16.5	19.1	+15.8
Hardware stores	28.5	28.4	29.1	30.9	+6.2
Furniture, TV, radio and appliance stores	152.0	148.0	160.0	186.6	+16.6
All other home furnishings stores	16.7	15.2	16.1	18.2	+13.0
Fuel dealers	98.2	109.3	114.3	120.9	+5.8
Jewellery stores	29.5	25.2	25.7	26.5	+3.1
All other retail stores	38.8	36.6	38.5	44.3	+15.1
Total, retail credit	1,528.7	1,550.9	1,617.2	1,780.9	+10.1

17.44 Summary statistics of co-operative marketing and purchasing associations, 1967-70 and by province, 1969 and 1970

Year and province		Associations	Share-holders or members	Farm marketings \$'000	Sales of merchandise \$'000	Total business ¹ \$'000
1967		1,357	1,363,374	1,372,842	681,356	2,090,976
1968		1,312	1,399,000	1,285,600	715,000	2,039,900
1969		1,244	1,388,000	1,231,900	721,400	1,995,600
1970		1,230	1,431,000	1,288,400	743,100	2,074,400
Newfoundland	1969	35	11,000	1,000	10,700	12,100
	1970	37	13,000	1,300	13,100	14,900
Prince Edward Island	1969	18	10,000	4,300	9,100	13,600
	1970	15	10,000	4,100	9,600	13,900
Nova Scotia	1969	86	33,000	38,200	28,400	67,800
	1970	82	34,000	44,400	30,000	75,700
New Brunswick	1969	46	17,000	13,300	19,400	33,000
	1970	43	17,000	12,400	19,500	32,300
Quebec	1969	367	104,000	198,900	165,900	370,500
	1970	394	129,000	209,400	177,500	394,700
Ontario	1969	138	106,000	91,200	111,600	207,500
	1970	123	103,000	94,500	116,400	215,500
Manitoba	1969	85	171,000	43,400	58,600	115,100
	1970	77	169,000	48,000	59,200	120,700
Saskatchewan	1969	264	458,000	383,300	142,400	536,600
	1970	259	459,000	405,700	140,800	557,400
Alberta	1969	121	281,000	241,500	100,400	345,300
	1970	120	293,000	243,900	107,400	354,000
British Columbia	1969	79	55,000	105,900	51,400	158,800
	1970	76	60,000	112,400	52,800	166,300
Interprovincial	1969	5	142,000	110,900	23,400	135,000
	1970	4	144,000	112,300	16,700	129,100

¹ Includes service revenue and other income.

17.45 Sales of products handled by marketing and purchasing co-operatives, 1967-70 (thousand dollars)

Product	1967	1968	1969	1970
Marketing	1,372,842	1,285,600	1,231,900	1,288,400
Dairy products	332,610	343,900	378,000	401,100
Fruits and vegetables	47,877	50,600	52,300	47,600
Grains and seeds	672,303	573,500	500,500	526,400
Livestock and livestock products	248,902	246,900	231,900	242,000
Eggs and poultry	57,200	57,500	54,700	57,500
Miscellaneous	13,950	13,200	14,500	13,800
Purchasing	681,356	715,000	721,400	743,100
Food products	189,472	208,100	223,200	239,500
Clothing and home furnishings	21,924	23,300	26,300	26,500
Hardware	50,011	52,500	57,200	56,000
Petroleum products	99,277	106,900	111,600	119,700
Feed	153,307	150,000	147,800	152,900
Fertilizer and spray material	55,276	56,900	48,600	42,300
Machinery and equipment	40,131	39,600	37,100	29,700
Building material	37,230	40,600	39,400	39,700
Miscellaneous	34,728	37,100	30,200	36,800
Total	2,054,198	2,000,600	1,953,300	2,031,500

17.46 Revenue of all governments¹ specifically derived from the control, taxation and sale of alcoholic beverages, years ended Mar. 31, 1968-71 (thousand dollars)

Government	1968	1969	1970	1971
Government of Canada	353,001	371,802	396,260	423,518
Provincial and territorial governments				
Newfoundland	10,537	11,806	12,916	14,450
Prince Edward Island	3,069	3,416	3,665	3,983
Nova Scotia	17,168	20,040	23,935	26,249
New Brunswick	13,360	17,633	17,662	19,279
Quebec	98,587	75,541	111,287	116,102
Ontario	150,532	194,013	180,404	195,008
Manitoba	23,701	25,789	27,941	30,760
Saskatchewan	24,589	25,754	26,476	27,895
Alberta	39,359	41,512	47,372	56,209
British Columbia	50,711	56,180	61,662	66,181
Total, provincial governments	431,713	471,684	513,320	556,116
Yukon Territory	1,292	1,666	1,808	1,865
Northwest Territories	1,707	1,908	2,148	2,404
Total, provincial and territorial governments	434,712	475,258	517,276	560,385
Total, all governments	787,713	847,060	913,536	983,903

¹ Revenue of the Government of Canada comprises excise duties, excise taxes, import duties and certain fees and licences. Revenue of provinces and territories includes revenue collected directly by the provincial and territorial governments as well as revenue of liquor authorities but excludes revenue resulting from general retail sales taxation.

17.47 Value and volume of sales of alcoholic beverages, years ended Mar. 31, 1970 and 1971

Province or territory	Spirits		Wines		Beer		Total	
	1970	1971	1970	1971	1970	1971	1970	1971
Value \$'000								
Nfld.	13,956	15,085	964	1,173	20,933	23,536	35,853	39,794
PEI	5,040	5,474	541	619	3,505	3,802	9,086	9,895
NS	31,271	34,574	4,624	5,409	27,633	29,983	63,528	69,966
NB	20,121	22,025	3,790	4,400	20,249	22,347	44,160	48,772
Que.	162,324	167,442	42,012	46,841	185,693	216,616	390,029	430,899
Ont.	324,421	347,006	55,336	64,784	267,693	285,575	647,450	697,365
Man.	40,632	45,528	6,380	7,141	38,015	40,861	85,027	93,530
Sask.	34,650	35,638	5,593	5,771	32,770	34,477	73,013	75,886
Alta.	72,766	77,573	12,543	15,155	55,179	63,663	140,488	156,391
BC	107,697	114,660	22,179	26,812	76,002	82,766	205,878	224,238
YT	1,925	1,940	326	362	1,784	1,987	4,035	4,289
NWT	2,398	2,695	392	484	1,993	2,410	4,783	5,589
Canada	817,201	869,640	154,680	178,951	731,449	808,023	1,703,330	1,856,614
Volume '000 gal								
Nfld.	369	403	66	82	4,969	5,582	5,404	6,067
PEI	137	148	56	63	1,039	1,113	1,232	1,324
NS	849	943	482	549	8,790	9,481	10,121	10,973
NB	510	565	409	461	5,950	6,530	6,869	7,556
Que.	4,634	4,760	4,313	4,739	98,667	106,571	107,614	116,070
Ont.	9,779	10,453	5,857	6,746	123,175	131,094	138,811	148,293
Man.	1,170	1,321	794	879	14,772	15,509	16,736	17,709
Sask.	991	1,010	682	692	11,772	12,383	13,445	14,085
Alta.	1,979	2,104	1,613	1,919	23,923	24,131	27,515	28,154
BC	3,379	3,577	2,784	3,273	33,306	36,285	39,469	43,135
YT	49	49	29	31	441	482	519	562
NWT	53	57	30	37	404	510	487	604
Canada	23,899	25,390	17,115	19,471	327,208	349,671	368,222	394,532

17.48 Summary statistics of estates closed during 1971 under the Bankruptcy Act

Item	Province					
	Nfld.	PEI	NS	NB	Que.	Ont.
Bankrupt estates ¹	No.	3	1	19	47	2,199
Estates closed	\$'000	12	3	366	364	58,879
Assets as estimated by debtors	"	302	12	1,427	1,530	87,024
Unsecured liabilities as estimated by debtors	"	7	1	200	243	9,823
Realization by trustee	"	5	1	64	127	5,205
Costs of administration	"	71.0	100.0	32.0	52.0	53.0
Costs as percentage of realization	%	2	—	136	116	4,618
Paid to unsecured creditors	\$'000	1	2	137	112	27,024
Retained by secured creditors	"	0.7	—	10.0	8.0	5.0
Average percentage recovered by unsecured creditors ²	%	—	—	1	—	216
Proposals	No.	—	—	—	—	55
Proposals closed	\$'000	—	—	97	—	20,961
Unsecured liabilities as estimated by debtors	"	—	—	—	—	2,177
Paid to unsecured creditors	"	—	—	—	—	2,175
	Man.	Sask.	Alta.	BC	Total	
Bankrupt estates ¹	No.	99	138	203	231	4,855
Estates closed	\$'000	1,730	900	2,364	4,440	100,906
Assets as estimated by debtors	"	3,992	3,468	5,624	8,770	169,919
Unsecured liabilities as estimated by debtors	"	469	223	799	1,404	20,294
Realization by trustee	"	310	134	357	527	9,913
Costs of administration	"	66.0	60.0	45.0	38.0	49.0
Costs as percentage of realization	%	159	89	442	877	10,381
Paid to unsecured creditors	\$'000	1,081	585	1,443	2,346	54,964
Retained by secured creditors	"	4.0	3.0	8.0	10.0	6.0
Average percentage recovered by unsecured creditors ²	%	—	—	—	—	—
Proposals	No.	4	2	2	6	286
Proposals closed	\$'000	61	205	163	838	36,002
Unsecured liabilities as estimated by debtors	"	61	40	65	157	4,675
Paid to unsecured creditors	"	—	—	—	—	—

¹ Includes bankruptcy administrations under the summary provisions of the Bankruptcy Act.

² The average percentage recovered during 1971 by unsecured creditors in estates closed under the general provisions of the Act was 7.5% on declared liabilities and 1.2% in respect to estates under the summary provisions of the Act.

17.49 Estimated liabilities¹ of bankruptcies and insolvencies, 1967-71 (thousand dollars)

Year	Atlantic Provinces	Quebec	Ontario	Prairie Provinces	British Columbia	Total
1967	6,772	123,457	60,422	21,344	6,069	218,064
1968	1,868	89,771	62,883	16,403	9,810	180,735
1969	3,137	118,534	51,078	13,208	25,148	211,105
1970	7,346	138,461	76,967	20,998	13,876	257,648
1971	10,591	121,451	97,533	72,223	20,256	322,054

¹ Estimated by debtors and therefore to be accepted with reservations.

17.50 Bankruptcies and insolvencies, by industry and economic area, 1971

Industry	Atlantic Provinces	Quebec	Ontario	Prairie Provinces	British Columbia	Total	Estimated liabilities \$'000
Primary industries	7	61	74	28	12	182	22,300
Manufacturing	4	164	120	11	21	320	110,291
Foods and beverages	1	13	8	3	1	26	12,106
Textiles	—	3	3	—	—	6	964
Clothing	—	32	16	—	3	51	9,634
Wood	2	28	19	—	8	57	10,763
Paper and allied industries	1	30	26	2	2	61	55,219
Primary and fabricated metal, machinery, transportation equipment, electrical products and non-metallic mineral products	—	34	29	5	6	74	15,979
Chemical	—	1	3	—	—	4	862
Other industries	—	23	16	1	1	41	4,764
Construction	6	174	175	63	47	465	45,696
General contractors	3	89	76	32	23	223	33,153
Special trade contractors	3	85	99	31	24	242	12,543
Transportation, communications and other utilities	4	77	97	54	26	258	8,885
Trade	18	697	546	127	75	1,463	75,835
Food	4	152	94	14	15	279	15,779
General merchandise	4	20	30	6	5	65	3,120
Automotive products	3	139	120	37	9	308	9,157
Apparel and shoes	2	116	82	22	9	231	9,752
Hardware	1	36	37	8	5	87	6,816
Household furniture and appliances	1	84	71	5	9	170	9,389
Drugs	2	16	13	2	3	36	2,195
Other trades	1	134	99	33	20	287	19,627

17.50 Bankruptcies and insolvencies, by industry and economic area, 1971 (concluded)

Industry	Atlantic Provinces	Quebec	Ontario	Prairie Provinces	British Columbia	Total	Esti- mated liabilities \$'000
Finance, insurance and real estate	4	49	41	13	8	115	33,731
Service	3	215	184	38	27	467	25,318
Education, health and welfare	—	13	11	—	2	26	3,718
Recreational	—	11	22	1	2	36	2,305
Business	1	35	34	6	4	80	7,769
Personal	2	137	93	28	16	276	9,945
Other	—	19	24	3	3	49	1,581
Total, all industries	46	1,437	1,237	334	216	3,270	322,054

Sources

- 17.1 - 17.19 Manufacturing and Primary Industries Division, Industry Statistics Branch, Statistics Canada.
 17.20 - 17.43 Merchandising and Services Division, Industry Statistics Branch, Statistics Canada.
 17.44 - 17.45 Marketing and Trade Division, Economics Branch, Canada Department of Agriculture.
 17.46 - 17.48 Information and Public Relations, Department of Consumer and Corporate Affairs.
 17.49 - 17.51 Public Finance Division, Institutional and Public Finance Statistics Branch, Statistics Canada.
 17.52 Superintendent of Bankruptcy, Department of Consumer and Corporate Affairs.
 17.53 - 17.54 Business Finance Division, General Statistics Branch, Statistics Canada.

Chapter 18

International trade

18.1 Federal trade services

Canada's economy continues to be vitally dependent on international trade. Competition among industrial nations is intense and increased exports are not easy to achieve. A successful export trade can only be assured by combining good products, efficient production and aggressive, intelligent marketing with government support.

Federal government support is provided through the Department of Industry, Trade and Commerce and the Export Development Corporation. The Department assists Canadian industry throughout the complete cycle — from research, design and development through production to marketing of the finished product. The Export Development Corporation, a Crown agency which reports to Parliament through the Minister of Industry, Trade and Commerce, provides insurance, guarantees, loans and other financial facilities to help Canadian exporters.

18.1.1 Department of Industry, Trade and Commerce

Departmental units involved in international trade are: Office of General Relations, Office of Special Import Policy, Export and Import Permits Branch, the International Bureaux, Trade Commissioner Service, Office of International Special Projects, Financing and Aid Branch, Grain Marketing Office, Transportation Services Branch, Fairs and Missions Branch, and the Program Office (Export Market Development), which handles the administration of the Program for Export Market Development.

The Office of General Relations includes a General Trade Policy Branch and a Commodity Trade Policy Branch, responsible, within the Department, for formulating and implementing Canadian external trade policy with particular reference to the activities of the General Agreement on Tariffs and Trade (GATT), the Organization for Economic Co-operation and Development (OECD) and the United Nations Conference on Trade and Development (UNCTAD). It is also responsible for the preparation and conduct of negotiations of intergovernmental commodity agreements, such as those for wheat, coffee and sugar.

The Office of Special Import Policy proposes action to be taken by government in the light of recommendations of the Textile and Clothing Board (with respect to imports of textiles and clothing) and of the Anti-dumping Tribunal (with respect to other "low-cost" products), as well as in other instances where "low-cost" imports have caused or are threatening serious injury to domestic production. It conducts export restraint negotiations with other governments and is responsible for Canadian input into international activities relating to textiles, i.e., under the GATT and the Arrangement Regarding International Trade in Cotton Textiles.

The Export and Import Permits Branch administers the federal Export and Import Permits Act. The intention of the Act is to ensure, by means of export controls, that there is an adequate supply and distribution in Canada of goods necessary for defence or other purposes; that no specified goods having a strategic nature will be made available to any destination wherein their use might be detrimental to the security of Canada; and to implement an intergovernmental arrangement or commitment. Also, by means of import controls, the Act is intended to ensure an adequate supply in Canada of goods that are scarce in world markets, or subject to governmental controls in the countries of origin or to allocation by intergovernmental arrangement; to implement action taken under certain other federal Acts to support the price or have the effect of supporting the price of specified goods; and to implement an intergovernmental arrangement or commitment. Other functions of this Branch are to advise exporters and importers on interpretation and requirements of the Export Control and Import Control Lists and Regulations; to study the economic implications of the Act; and to review Control Lists and practices.

The International Bureaux (European Bureau, Pacific, Asia and Africa Bureau, and Western Hemisphere Bureau) provide the central departmental points of contact on matters affecting Canada's trade and economic relations with other countries and areas. The Bureaux are

centralized sources of information on Canada's trade with specific countries or regions and they provide a regional perspective for matters of both international trade relations and export trade development. Their responsibilities include: developing Canada's international trade strategy and programs for individual countries and areas; maintaining and improving access for Canadian products to export markets through negotiation of trade agreements with other countries and consulting on trade relations and trade problems at the official level with foreign governments. They also provide information, advice and guidelines to government agencies and to the business community on foreign governments' trade and economic regulations and practices; maintain contact, normally through Canadian posts abroad, with foreign markets and foreign governments on matters pertaining to markets for Canadian exports; and provide advice to the Department, to other Canadian government agencies and to the Canadian business community on export market problems and opportunities.

The Trade Commissioner Service has 82 trade offices in 57 different countries. Its primary role is to promote Canada's export trade and generally to protect its commercial interests abroad. Accordingly, a trade commissioner is called upon to perform a wide variety of tasks: to act as an export marketing consultant; to bring foreign buyers into contact with Canadian sellers; to help organize trade fairs and trade missions in his territory; to recommend modes of distribution and suitable agents; and to keep headquarters informed of changes in tariffs, exchange controls and other matters that might affect Canada's trade with the country to which he is assigned. He initiates programs to develop markets for those products with the greatest potential in given areas, handles inquiries from Canadian firms and provides personal assistance to the Canadian exporter in his territory. In addition, he acts on behalf of the foreign programs of a number of federal government departments and undertakes agricultural reporting at specified posts. For a Canadian firm wishing to develop a market in his territory, the trade commissioner can supply information on product usage, if any, in that territory, on local production and import data for the product and on prospective users and/or agents for it.

The scheduled return of trade commissioners for official tours of Canada is an effective means of informing Canadian firms interested in export trade, and trade associations are informed well in advance of these visits so that appointments can be arranged for discussion of problems with firms interested in exporting to his territory. Businessmen wishing to interview any trade commissioner on tour may arrange to do so by communicating with the Trade Commissioner Service, the Canadian Manufacturers' Association, the local Chamber of Commerce or Board of Trade, or one of the Department's regional offices.

The Office of International Special Projects consists of two Branches: the Defence Programs Branch and the Special Projects Branch, which develop certain types of special export opportunities by promoting Canadian industrial participation in projects and programs abroad. Many of these export opportunities are capital projects requiring goods and services from several sources of supply, no one of which can normally undertake the lead in exploiting such a project. This Office attempts to provide the special government assistance needed to co-ordinate the efforts of all concerned.

The Defence Programs Branch promotes defence export trade through marketing programs aimed at the sale of Canadian defence and defence-related high-technology equipment to friendly countries, and the establishment of arrangements with Canada's allies for co-operative defence industrial research, development and production. A major activity is the Canada - United States defence-development and production-sharing program, which entails the joint development and reciprocal procurement of defence items.

The Special Projects Branch identifies and exploits opportunities for capital projects abroad having multi-industry content, including those related to airports, tourism, education, health care and pollution abatement; provides marketing assistance to service industries, particularly providing a focal point in the Department for consulting engineers; and co-ordinates departmental marketing activities in the promotion of Canadian participation in projects financed by multilateral and bilateral aid sources such as the World Bank and regional development banks.

The Financing and Aid Branch participates in the development of policies and procedures for external aid, export credits and other export financing arrangements. In addition, it keeps Canadian exporters informed about the range of financing facilities provided by the Canadian government and those available through international financial institutions.

The Grain Marketing Office consolidates the Department's operational and market development activities for grains and oilseeds and their products, and works closely with the Grains Group and the Canadian Wheat Board in a continuing review of grain policies and programs. It follows developments in grain markets and sales opportunities and maintains a comprehensive program of market development and sales promotion.

The Transportation Services Branch is concerned with the transportation environment and with short- and long-term transportation problems that affect Canadian trade and industrial development. Continuing reviews are made of freight rates and services to shippers, and of regional, national and international transportation policies and measures that have an impact on Canadian trade, and assistance is provided to shippers in selecting appropriate transportation routes and modes at lowest possible freight costs. The Branch participates in national and international organizations and conferences concerned with cargo movement, intermodal transport, simplification of documentation and facilitation of trade procedures, and international maritime development.

The Fairs and Missions Branch formulates the departmental program of trade promotions and plans, organizes and manages individual promotional events designed to stimulate the sale of Canadian products and services abroad. The range of its activities includes participating in international trade fairs, solo shows and in-store promotions, and organizing technical seminars and trade missions to and from Canada. Fairs abroad display Canadian products and expertise covering a broad spectrum from electronics and computer equipment to frozen foods; from ocean technology to Canadian styles in clothing and footwear; and from wood products to cattle. The Department provides promotional publicity and a highly organized and specially designed exhibit setting.

Missions and technical seminars vary in type depending on the objective but, in general, out-going missions are used for market investigation and evaluation and identification of technical market access problems, while incoming missions are designed to invite foreign government or company representatives, who can influence buying, to inspect the industrial capacity and technical capabilities of Canadian firms and the products and services they can supply. Technical seminars are used to acquaint potential buyers with Canadian expertise and technology in specific fields.

The Fairs and Missions program includes planned provision to take advantage, at short notice, of foreign market opportunities which cannot be foreseen: these include the Incoming Trade Delegates and Buyers Program and the Export Oriented Training Program.

18.1.2 Office of Tourism

The Office of Tourism comprises the Canadian Government Travel Bureau and the Travel Industry Branch. The Bureau is charged with promoting domestic travel and travel to Canada from other countries; the Branch is concerned with ensuring that the various sectors of the Canadian travel industry – the facilities, services and attractions – make the best possible contribution to tourism activity.

To accomplish its primary function of encouraging Canadians to "Explore Canada" and of attracting visitors to Canada, the Canadian Government Travel Bureau undertakes extensive tourist advertising and promotion campaigns in Canada and abroad, and provides tourist publicity material for newspapers, magazines, radio and television, and film outlets. It works closely with travel agents and tour operators on three continents and maintains an extensive travel counselling service, providing brochures and information to about seven million potential visitors annually. Offices are operated in New York, Chicago, San Francisco, Minneapolis, Los Angeles, Boston, Philadelphia, Cincinnati, Buffalo, Cleveland, Detroit, Washington, Pittsburgh, Atlanta and Seattle in the United States; and in London, Paris, Frankfurt, The Hague, Mexico City, Tokyo and Sydney.

The Travel Industry Branch is concerned primarily with the "supply" side of Canadian tourism. Its duties entail close examination of the nature and extent of tourist facilities and services in Canada and appraisal of their adequacy to meet visitor expectations; study of federal, provincial and private programs and policies related to the growth and development of the travel industry; assessment of industry strengths, weaknesses and problems; and preparation of advice to the Minister on ways and means to improve the facilities, services and attractions of the various sectors of the industry. Close liaison is maintained with federal and provincial departments and agencies having activities related to travel and tourism and with

major elements of the private sector of the Canadian travel industry. The Branch also keeps under review the tourism and travel policies and practices of other countries, studies trends and developments in international tourism, and concerns itself with the activities of international organizations and agencies that affect Canada's travel industry.

18.1.3 Export Development Corporation

The EDC is a Crown corporation empowered by federal statute to insure Canadian firms against non-payment when Canadian goods and services are sold abroad; to make loans to foreign purchasers of Canadian capital equipment and technical services; to guarantee financial institutions against loss when they are involved in an export transaction by financing either the Canadian supplier or the foreign buyer; and to insure Canadian firms against loss of their investments abroad by reason of political actions. Direction of the affairs of the Corporation is vested in a 12-member board, having its head office in Ottawa and district offices in Montreal, Toronto and Vancouver.

Export credits insurance. EDC may insure Canadian exporters against non-payment when they grant credit to foreign buyers under contracts involving the following classes of export transactions: consumer goods sold on short-term credit usual for the particular trade, which normally ranges from documentary sight draft to a maximum of 180 days; capital goods such as heavy machinery sold on medium-term credit which may extend to a maximum of five years; services rendered to a foreign customer, such as design, engineering, construction, and technological and marketing services; treatment or servicing of goods for a foreign customer; photogrammetric and geophysical surveys, etc. EDC may also insure the payment of "invisible" exports such as the sale or licensing to a foreign customer of any right in a patent, trademark or copyright, advertising fees, fees to auditors, consultants, etc. To assist him in financing for exports, a policy-holder may request EDC to assign the proceeds of any losses payable under a policy to a bank or other agent providing financing in respect of export sales. An exporter may assign an individual bill or he may make a blanket assignment of all his foreign accounts receivable.

The main risks covered under an EDC policy are: insolvency of the foreign buyer; failure of the buyer to pay to the exporter within six months after due date the gross invoice value of goods which he has duly accepted; repudiation by the buyer which does not result from a breach of contract by the exporter and where proceedings against the buyer would serve no useful purpose; blockage of funds or transfer difficulties which prevent the Canadian exporter from receiving payment; war or revolution in the buyer's country; cancellation or non-renewal of an export permit and the imposition of restrictions on the export of goods not previously subject to restriction; and any other cause outside the control of both the exporter and the buyer which arises from events occurring outside Canada and continental United States of America, e.g., the cancellation of an import licence or the imposition of import restrictions on goods not previously subject to licence or restriction.

Export finance. EDC also makes long-term loans to foreign purchasers or guarantees private loans to foreign purchasers at internationally competitive interest rates, to finance Canadian exports of capital equipment and services when extended credit terms are not required and when commercial financing is not available. In addition, where international competition so requires, EDC may guarantee local cost financing provided by the private sector, or may finance directly up to a maximum of 20% of the value of the goods and services exported from Canada in respect of a finance project.

While it is not exclusive, the following capital equipment and services, by industry, are eligible for export financing. Power industry: conventional and nuclear power plants, electrification programs and transmission lines, etc.; transportation industry: aircraft, airport projects, flight simulators, navigational equipment, ocean-going vessels, locomotives, rolling stock, subway systems, integrated pipelines, etc.; communications industry: equipment for telecommunications such as telephone systems, microwave facilities, earth satellite stations, etc.; other capital goods industries: equipment for wood, pulp and paper, chemical, mining, construction and metallurgical projects, etc.; under certain conditions long-term loans and guarantees would be available for airport terminals and hotels; and services: services related to appraisal and development (but not feasibility studies) of natural resources and primary and secondary industry projects. EDC may make loans to foreign national development banks for re-lending to importers in their respective countries to enable them to buy Canadian capital goods.

A transaction must be of substantial value (\$1 million or more) for which extended credit terms (beyond five years) are necessary and justifiable; exceptions may be considered in special circumstances, e.g., to enable a Canadian supplier to participate in the field of his specialization in development projects abroad being financed mainly by foreign lenders. The project must be financially and economically sound and the foreign buyer and the country to which the goods are shipped must be creditworthy. The transaction must have a Canadian material/labour content of not less than 80%, it must provide employment and industrial benefits for Canada, as well as give promise of future markets for Canadian exports in the country or geographical area concerned, and all goods and services financed must normally be exported from Canada.

Foreign investment insurance. EDC offers insurance against certain political risks of loss of Canadian investments abroad. Investments may vary from that of the investor acquiring the right to share in the assets of a business carried on in a foreign country to that of the investor lending money to a person in a foreign country for the purpose of establishing a business in that country.

Only new investments made in developing countries qualify for foreign investment insurance but the Export Development Act allows considerable flexibility as to the type. Coverage cannot be extended to existing investments. Before a policy is issued, the Minister of Industry, Trade and Commerce must be assured that the interests of EDC in insured investments will be protected. In addition, the government of the recipient country must signify its approval of the investment by the particular investor.

The program offers facilities covering three broad political risks: inconvertibility, or inability to repatriate earnings or capital; expropriation; and insurrection, revolution or war. The investor can elect to take out a policy covering any, or all, or any combination of the three political risks; coverage is restricted to a maximum of 15 years. Any person, including private companies, government agencies, partnerships and organizations, carrying on business or other activities in Canada, and wishing to insure a new investment, should approach EDC as early as possible in the planning stages of the investment for an opinion as to the eligibility of the proposed investment for foreign investment insurance.

18.2 Tariffs and trade agreements

18.2.1 Canadian tariff structure

Information relating to rates of duty, value for duty and anti-dumping duty is available from the Department of National Revenue, Customs and Excise, which administers the Customs Act, the Customs Tariff and the Anti-dumping Act. Details of the organization and functions of the Tariff Board will be found in Appendix 1.

The Canadian tariff consists, in the main, of three sets of tariff rates — British preferential, most-favoured-nation, and general.

British preferential tariff rates are, with some exceptions, the lowest rates. They are applied to imported commodities from British countries, with the exception of Hong Kong, when conveyed without trans-shipment from a port of any British country enjoying the benefits of the British preferential tariff into a port of Canada. Some Commonwealth countries have trade agreements with Canada that provide for rates of duty, on certain specified goods, lower than the British preferential rates.

Most-favoured-nation rates are usually higher than the British preferential rates and lower than the general tariff rates. They are applied to commodities imported from countries with which Canada has trade agreements. These rates would apply to British countries when they are lower than the British preferential tariff rates. The most important trade agreement concerning the effective rates applied to goods imported from countries entitled to most-favoured-nation rates is the General Agreement on Tariffs and Trade (GATT).

General tariff rates are applied to goods imported from the few countries with which Canada has not made trade agreements.

There are numerous goods which are duty-free under the British preferential tariff, or under both the British preferential and the most-favoured-nation tariffs, or under all tariffs.

Valuation. In general, the Customs Act provides that the value for duty of imported goods shall be the fair market value of like goods as established in the home market of the exporter at the time when and place from which the goods are shipped directly to Canada when sold “(a)

to purchasers located at that place with whom the vendor deals at arm's length and who are at the same or substantially the same trade level as the importer, and (b) in the same or substantially the same quantities for home consumption in the ordinary course of trade under competitive conditions". In cases where like goods are not sold for home consumption but similar goods are sold, the value for duty shall be the cost of production of the goods imported plus an amount for gross profit equal in percentage to that earned on the sale of similar goods in the country of export. The value for duty ordinarily may not be less than the amount for which the goods were sold to the purchaser in Canada, exclusive of all charges thereon after their shipment from the country of export. Internal taxes in the country of export (when not incurred on exported goods), the cost of shipping goods to Canada and similar charges do not normally form part of the value for duty. There are, of course, further provisions for determining value for duty under the Act.

Anti-dumping Act. Canada's Anti-dumping Act provides, in brief, that where goods are dumped, i.e., the export price is less than the normal value, and such dumping has caused, is causing, or is likely to cause material injury to the production of like goods in Canada, or has materially retarded or is materially retarding the establishment of the production in Canada of like goods as determined by the Anti-dumping Tribunal, there shall be levied, collected and paid an anti-dumping duty. This anti-dumping duty is in an amount equal to the margin of dumping of the entered goods.

Drawback. There are provisions in the Customs and Excise Tax Acts for the repayment of a portion of the duty, sales and/or excise taxes paid on imported goods used in the manufacture of products later exported. The purpose of these drawbacks (as these repayments are called) is to assist Canadian manufacturers to compete in foreign markets with foreign producers of similar goods. A second class of drawback, known as "home consumption" drawbacks, is provided for under the Customs Act and the Customs Tariff and applies to imported materials and/or parts used in the production of specified goods to be consumed in Canada.

18.2.2 Tariff and trade arrangements

Canada's tariff arrangements with other countries fall into three main categories: trade agreements with a number of Commonwealth countries; the General Agreement on Tariffs and Trade (GATT); and other arrangements and agreements.

Canada signed the Protocol of Provisional Application of the General Agreement on Tariffs and Trade on October 30, 1947 and brought the General Agreement into force on January 1, 1948. The Agreement provides for scheduled tariff concessions and the exchange of most-favoured-nation treatment among the contracting parties, and lays down rules and regulations to govern the conduct of international trade. As at December 31, 1972 there were 81 members and one provisional member, Tunisia. GATT is applied on de facto basis also to a number of newly independent states pending decision as to their future commercial policies.

Trade relations between Canada and a number of other countries are governed by trade agreements of various kinds, by exchange of most-favoured-nation treatment under Orders in Council, by continuation to newly independent states of the same treatment originally negotiated with the countries previously responsible for their commercial relations and by even less formal arrangements.

Both Britain and Ireland have given notice of their intention to terminate their bilateral trade agreements with Canada on February 1, 1973. As a result of the accession by these countries to the European Economic Community (EEC), the tariff preferences they extend to Canada will be phased out over a transitional period ending in 1977.

18.2.2.1 Tariff and trade arrangements with Commonwealth countries as at December 31, 1972

Australia. Trade agreement in force June 30, 1960. GATT effective January 1, 1948. (Bindings of rates of duty and margins of preference on specified products and exchange of tariff preferences.)

Bangladesh (formerly East Pakistan). Relations covered by Trade Agreement of 1937 with Britain. GATT effective December 16, 1972. (Canada accords British preferential treatment.)

Barbados. Relations are based on Canada - West Indies Trade Agreement and protocol thereto (see Commonwealth Caribbean). GATT effective November 30, 1966. (Exchange of preferential tariff treatment.)

Botswana. Relations governed by Trade Agreement of 1937 with Britain. GATT de facto application. (Canada accords British preferential tariff treatment.)

Britain. Trade agreement effective September 1, 1937; modified by exchanges of letters November 16, 1938 and October 30, 1947. GATT effective January 1, 1948. (Various concessions are granted by each country including exchange of preferential tariff treatment. The Agreement, as modified, includes provisions relating to the colonies, dependencies and trusteeships. Britain has given notice of its intention to terminate its bilateral trade agreement with Canada on February 1, 1973. As a result of Britain's accession to the EEC, the tariff preferences it extends to Canada will be phased out over a transitional period ending in 1977.)

Commonwealth Caribbean (Bahamas, Bermuda, British Honduras, Leeward Islands, Windward Islands). Canada - British West Indies Trade Agreement in force April 30, 1927; Canadian notice of termination of November 23, 1938, was replaced by notice of December 27, 1939, which continued the Agreement. Protocol signed July 8, 1966, provides inter alia for continuation of 1925 Agreement. Bermuda, British Honduras, the Leeward Islands and the Windward Islands participate in GATT. (Exchange of preferential tariff treatment.)

Cyprus. Relations governed by Trade Agreement of 1937 with Britain. GATT effective August 16, 1960. (Exchange of British preferential tariff treatment.)

Fiji. Relations governed by Canada - United Kingdom Trade Agreement of 1937. Fiji maintains de facto application of GATT. (Exchange of British preferential tariff treatment.)

Gambia. GATT effective February 18, 1965. (Canada accords British preferential tariff treatment to Gambia. Gambia extends most-favoured-nation treatment to Canada.)

Ghana. GATT effective October 18, 1957. (Canada accords British preferential tariff treatment to Ghana, except on cocoa beans. Ghana extends most-favoured-nation treatment to Canada.)

Guyana. Relations are based on the Canada - West Indies Trade Agreement and protocol thereto (see Commonwealth Caribbean). GATT effective July 5, 1966. (Exchange of preferential tariff treatment.)

India. Since 1897 Canada has unilaterally accorded British preferential treatment without contractual obligation. GATT effective July 8, 1948. (Canada accords British preferential tariff treatment to India. India extends most-favoured-nation treatment to Canada.)

Jamaica. Relations are based on Canada - West Indies Trade Agreement and protocol thereto (see Commonwealth Caribbean). GATT effective August 6, 1962. (Exchange of preferential tariff treatment.)

Kenya. Relations governed by Trade Agreement of 1937 with Britain. GATT effective December 12, 1963. (Canada accords British preferential tariff treatment to Kenya. Kenya extends most-favoured-nation treatment to Canada.)

Lesotho. Relations governed by Trade Agreement of 1937 with Britain. GATT de facto application. (Canada accords British preferential tariff treatment to Lesotho.)

Malawi. Malawi and Canada observe the terms of 1958 Trade Agreement between Canada and the former Federation of Rhodesia and Nyasaland. GATT effective July 6, 1964. (Exchange of preferential tariff treatment.)

Malaysia. Relations governed by Trade Agreement of 1937 with Britain. GATT effective September 16, 1963. (Exchange of British preferential tariff treatment.)

Maldives. Relations governed by Trade Agreement of 1937 with Britain. GATT de facto application. (Canada accords British preferential tariff treatment.)

Malta. Relations governed by Trade Agreement of 1937 with Britain. GATT effective September 16, 1964. (Exchange of British preferential tariff treatment.)

Mauritius. GATT effective March 12, 1968. (Exchange of British preferential tariff treatment.)

New Zealand. Trade Agreement in force May 24, 1932. GATT effective July 26, 1948. (Bindings of rates of duty on specified products and the exchange of tariff preferences.)

Nigeria. Relations governed by Trade Agreement of 1937 with Britain. GATT effective October 1, 1960. (Canada accords British preferential treatment to Nigeria. Nigeria extends most-favoured-nation treatment to Canada.)

Rhodesia. Canada does not recognize the present government of Rhodesia. (Trade embargo exists between Canada and Rhodesia with certain humanitarian exceptions.)

Sierra Leone. Relations governed by Trade Agreement of 1937 with Britain. GATT effective April 27, 1961. (Canada accords British preferential tariff treatment to Sierra Leone. Sierra Leone extends most-favoured-nation tariff treatment to Canada.)

Singapore. Relations governed by Trade Agreement of 1937 with Britain. GATT de facto application. (Exchange of British preferential tariff treatment.)

Sri Lanka, Republic of (formerly Ceylon). Relations governed by Trade Agreement of 1937 with Britain. GATT effective July 29, 1948. (Exchange of British preferential tariff treatment.)

Swaziland. Relations governed by Trade Agreement of 1937 with Britain. GATT de facto application. (Canada accords British preferential treatment to Swaziland.)

Tanzania. GATT effective for Tanganyika December 9, 1961 and extended to Zanzibar upon formation of United Republic, April 23, 1964. (Canada accords British preferential tariff treatment to Tanzania. Tanzania extends most-favoured-nation treatment to Canada.)

Tonga. Tonga maintains de facto application of GATT. (Exchange of British preferential tariff treatment.)

Trinidad and Tobago. Relations are based on Canada - West Indies Trade Agreement and protocol thereto (see Commonwealth Caribbean). GATT effective August 31, 1962. (Exchange of preferential tariff treatment.)

Uganda. GATT effective October 9, 1962. (Canada accords British preferential tariff treatment to Uganda. Uganda extends most-favoured-nation tariff treatment to Canada.)

Western Samoa. No agreement. (Exchange of British preferential tariff treatment.)

Zambia. GATT de facto application. (Canada accords British preferential tariff treatment to Zambia. Zambia extends most-favoured-nation treatment to Canada.)

18.2.2.2 Tariff and trade arrangements with non-Commonwealth countries, as at December 31, 1972

Algeria. Franco - Canadian Trade Agreement of 1933 applied to Algeria. Algeria maintains de facto application of GATT. (Since the creation of Algeria as an independent state in 1962, Canada has continued to grant most-favoured-nation treatment.)

Arab Republic of Egypt. Exchange of notes in force December 3, 1952. GATT effective May 9, 1970. (Exchange of most-favoured-nation treatment.)

Argentina. Trade Agreement in force November 15, 1941. GATT effective October 11, 1967. (Exchange of most-favoured-nation treatment.)

Austria. GATT effective October 19, 1951. (Exchange of most-favoured-nation treatment.)

Bahrain. Bahrain maintains de facto application of GATT. (Exchange of most-favoured-nation treatment.)

Belgium - Luxembourg. Convention of Commerce with Belgium - Luxembourg Economic Union (including Belgian colonies) entered into effect October 22, 1924. GATT effective January 1, 1948. (Exchange of most-favoured-nation treatment.)

Benelux (Belgium - Netherlands - Luxembourg Customs Union). (See Belgium - Luxembourg and Netherlands.)

Bolivia. Order in Council of July 20, 1935 accepted Article 15 of UK - Bolivia Treaty of Commerce. (Exchange of most-favoured-nation treatment.)

Brazil. Trade Agreement in force April 16, 1943. GATT effective July 31, 1948. (Exchange of most-favoured-nation treatment.)

Bulgaria. Trade Agreement signed October 8, 1963 renewed for further three years from October 8, 1966 and extended on de facto basis. (Exchange of most-favoured-nation treatment and undertaking by Bulgaria to purchase a minimum of 200,000 metric tons of wheat or equivalent in flour during the three-year validity of the Agreement.)

Burma. GATT effective July 29, 1948. (Exchange of most-favoured-nation treatment.)

Burundi. GATT effective November 25, 1965. (Exchange of most-favoured-nation treatment.)

Cameroon. Franco - Canadian Trade Agreement of 1933 applied to Cameroon. GATT effective November 28, 1960. (Exchange of most-favoured-nation treatment.)

Central African Republic. Franco - Canadian Trade Agreement of 1933 applied to Central African Republic. GATT effective August 14, 1960. (Exchange of most-favoured-nation treatment.)

Chad. Franco - Canadian Trade Agreement of 1933 applied to Chad. GATT effective August 11, 1960. (Exchange of most-favoured-nation treatment.)

Chile. Trade Agreement in force October 29, 1943. GATT effective March 16, 1948. (Exchange of most-favoured-nation treatment.)

China. Modus vivendi in force September 28, 1946. (Exchange of most-favoured-nation treatment.)

Colombia. Treaty of Commerce with Britain of February 16, 1866 applies to Canada. Modified by protocol of August 20, 1912 and exchange of notes December 30, 1938. (Exchange of most-favoured-nation treatment.)

Congo (Brazzaville). Franco - Canadian Trade Agreement of 1933 applies to Congo (Brazzaville). GATT effective August 15, 1960. (Exchange of most-favoured-nation treatment.)

Costa Rica. Modus vivendi in force January 26, 1951. (Exchange of most-favoured-nation treatment.)

Cuba. GATT effective January 1, 1948. (Exchange of most-favoured-nation treatment.)

Czechoslovakia. Convention of Commerce in force November 14, 1928. GATT effective May 21, 1948. (Exchange of most-favoured-nation treatment.)

Dahomey. Franco - Canadian Trade Agreement of 1933 applied to Dahomey. GATT effective August 1, 1960. (Exchange of most-favoured-nation treatment.)

Denmark (including Greenland). Treaties of Peace and Commerce with Britain of February 13, 1660 and July 11, 1670 apply to Canada. GATT effective May 28, 1950. (Exchange of most-favoured-nation treatment.)

Dominican Republic. Trade Agreement in force January 22, 1941. GATT effective May 19, 1950. (Exchange of most-favoured-nation treatment, including scheduled concessions.)

Ecuador. Modus vivendi in force December 1, 1950. (Exchange of most-favoured-nation treatment.)

El Salvador. Exchange of notes in force November 17, 1937. (Exchange of most-favoured-nation treatment.)

Equatorial Guinea. Since August 1, 1928, UK - Spain Treaty of Commerce of 1922, Canada - Spain Trade Agreement signed May 25, 1954. GATT de facto application. (Since the creation of Equatorial Guinea as an independent state in 1968, Canada has continued to grant most-favoured-nation treatment.)

Ethiopia. Exchange of notes effective June 3, 1955. (Exchange of most-favoured-nation treatment.)

Finland. Exchange of notes effective November 17, 1948. GATT effective May 25, 1950. (Exchange of most-favoured-nation treatment.)

France and French overseas territories. Trade Agreement in force June 10, 1933. Exchange of notes of September 29, 1934 and additional protocol of February 26, 1935. GATT effective January 1, 1948. (Exchange of most-favoured-nation treatment, including scheduled concessions.)

Gabon. Franco - Canadian Trade Agreement of 1933 applied to Gabon. GATT effective August 17, 1960. (Exchange of most-favoured-nation treatment.)

Germany, Federal Republic of. GATT effective October 1, 1951. (Exchange of most-favoured-nation treatment.)

Greece. Modus vivendi by exchange of notes of July 24-28, 1947. GATT effective March 1, 1951. (Exchange of most-favoured-nation treatment.)

Greenland. (See Denmark.)

Guatemala. Trade Agreement in force January 14, 1939. (Exchange of most-favoured-nation treatment.)

Guinea. Franco - Canadian Trade Agreement of 1933 applied to Guinea. (Since the creation of Guinea as an independent state in 1958, Canada has continued to grant most-favoured-nation treatment.)

Haiti. Trade Agreement in force January 10, 1939. GATT effective January 1, 1950. (Exchange of most-favoured-nation treatment.)

Honduras. Exchange of notes effective July 18, 1956. Ratified in Honduras September 5, 1956. (Exchange of most-favoured-nation treatment.)

Hungary. Trade Agreement January 1, 1972 effective until January 1, 1977. (Exchange of letters outlining Hungarian intention to increase imports from Canada. Provides for annual consultation.)

Iceland. GATT effective April 21, 1968. (Exchange of most-favoured-nation treatment.)

Indonesia. GATT effective March 1, 1948. (Exchange of most-favoured-nation treatment.)

Iran. Iran accorded most-favoured-nation treatment by Order in Council from September 5, 1956. (Canada grants most-favoured-nation tariff rates as long as Iran accords reciprocal treatment.)

Iraq. Special arrangement by Order in Council effective September 15, 1951. (Exchange of most-favoured-nation treatment.)

Ireland. Trade Agreement in force January 2, 1933. Modified by exchange of letters on December 21, 1967. GATT effective December 22, 1967. (Bindings to Canada of rates of duty on specified products, and exchange of preferential treatment. Ireland has given notice of its intention to terminate its bilateral trade agreement with Canada on February 1, 1973. As a result of Ireland's accession to the EEC, the tariff preferences it extends to Canada will be phased out over a transitional period ending in 1977.)

Israel. GATT effective July 5, 1962. (Exchange of most-favoured-nation treatment.)

Italy. Modus vivendi by exchange of notes effective April 28, 1948. GATT effective January 1, 1950. (Exchange of most-favoured-nation treatment.)

Ivory Coast. Franco - Canadian Trade Agreement of 1933 applied to Ivory Coast. GATT effective August 7, 1960. (Exchange of most-favoured-nation treatment.)

Japan. Agreement on Commerce effective June 7, 1954. GATT effective September 10, 1955. (Exchange of most-favoured-nation treatment.)

Khmer Republic (formerly Cambodia). Franco - Canadian Trade Agreement of 1933 applied to Cambodia. Became a de facto member of GATT in 1968. (Since the creation of Cambodia as an independent state in 1955, Canada has continued to grant most-favoured-nation treatment.)

Korea, Republic of. Trade Agreement in force December 20, 1966. GATT effective April 14, 1967. (Exchange of most-favoured-nation treatment.)

Kuwait. GATT effective June 18, 1961. (Exchange of most-favoured-nation treatment.)

Laos. Franco - Canadian Trade Agreement of 1933 applied to Laos. (Since the creation of Laos as an independent state in 1955, Canada has continued to grant most-favoured-nation treatment.)

Lebanon. Special arrangement by Order in Council of November 19, 1946. (Canada grants most-favoured-nation tariff rates as long as Lebanon accords reciprocal treatment.)

Liberia. Special arrangement by Order in Council effective March 1, 1955. (Canada grants most-favoured-nation treatment.)

Liechtenstein. (See Switzerland.)

Luxembourg. (See Belgium - Luxembourg.)

Malagasy Republic. Franco - Canadian Trade Agreement of 1933 applied to Malagasy Republic. GATT effective September 30, 1963. (Exchange of most-favoured-nation treatment.)

Mali. Franco - Canadian Trade Agreement of 1933 applied to Mali. Mali maintains a de facto application of GATT. (Since the creation of Mali as an independent state in 1960, Canada has continued to grant most-favoured-nation treatment.)

Mauritania. Franco - Canadian Trade Agreement of 1933 applied to Mauritania. GATT effective November 28, 1960. (Exchange of most-favoured-nation treatment.)

Mexico. Trade Agreement in force June 5, 1947. (Exchange of most-favoured-nation treatment.)

Morocco. Various agreements relating to former French, Spanish and International Zones of Morocco. (Since the creation of Morocco as an independent state in 1956, Canada has continued to grant most-favoured-nation treatment.)

Netherlands. Convention of Commerce of July 11, 1924 includes Netherlands Antilles and Surinam. GATT effective January 1, 1948. (Exchange of most-favoured-nation treatment.)

Nicaragua. Trade Agreement in force December 19, 1946. GATT effective May 28, 1950. (Exchange of most-favoured-nation treatment.)

Niger. Franco - Canadian Trade Agreement of 1933 applied to Niger. GATT effective August 3, 1960. (Exchange of most-favoured-nation treatment.)

Norway. Convention of Commerce and Navigation with UK of March 18, 1826 applied to Canada. GATT effective July 10, 1948. (Exchange of most-favoured-nation treatment.)

Pakistan. Canada unilaterally accords British preferential treatment without contractual obligation. GATT effective July 30, 1948. (Canada accords British preferential tariff treatment to Pakistan. Pakistan accords most-favoured-nation tariff treatment to Canada.)

Panama. Exchange of notes in force August 12, 1935. (Exchange of most-favoured-nation treatment.)

Paraguay. Exchange of notes in force June 21, 1940. (Exchange of most-favoured-nation treatment.)

Peru. GATT effective October 8, 1951. (Exchange of most-favoured-nation treatment.)

Philippines. Trade Agreement in force August 29, 1972. (Exchange of most-favoured-nation treatment.)

Poland. Convention of Commerce in force August 15, 1936. GATT effective October 18, 1967. (Exchange of most-favoured-nation treatment.)

Portugal, Portuguese adjacent islands and Portuguese overseas provinces. Trade Agreement in force April 29, 1955. GATT effective May 6, 1962. (Exchange of most-favoured-nation treatment.)

Qatar. Qatar maintains de facto application of GATT. (Exchange of most-favoured-nation treatment.)

Romania. Trade Agreement effective for three years from March 22, 1971. GATT effective November 14, 1971. (Exchange of most-favoured-nation treatment and Romania endeavours to provide improved access for Canadian exports. Provides for annual consultation.)

Rwanda. GATT effective January 1, 1966. (Canada grants most-favoured-nation treatment.)

Senegal. Franco - Canadian Trade Agreement of 1933 applied to Senegal. GATT effective June 20, 1960. (Exchange of most-favoured-nation treatment.)

South Africa. Trade Agreement in force October 13, 1932. Exchange of notes August 2-31, 1935, effective retroactively from July 1, 1935. GATT effective June 14, 1948. (Exchange of British preferential rates on scheduled items. Exchange of most-favoured-nation treatment.)

Spain and Spanish possessions. Since August 1, 1928. Canada has adhered to UK - Spain Treaty of Commerce of October 31, 1922. Trade Agreement signed May 26, 1954. GATT effective August 29, 1963. (Exchange of most-favoured-nation treatment.)

Sweden. UK - Sweden Convention of Commerce and Navigation of March 18, 1826 applies to Canada. GATT effective May 1, 1950. (Exchange of most-favoured-nation treatment.)

Switzerland. UK - Switzerland Treaty of Friendship, Commerce and Reciprocal Establishment of September 6, 1855 applies to Canada. By exchange of notes Liechtenstein included under terms of this Agreement, effective July 11, 1947. GATT effective August 1, 1966. (Exchange of most-favoured-nation treatment.)

Syrian Arab Republic. Special Arrangement by Order in Council of November 19, 1946. (Canada grants most-favoured-nation treatment tariff rates as long as Syria accords reciprocal treatment.)

Thailand. Modus vivendi effective April 22, 1969. (Exchange of most-favoured-nation treatment.)

Togo. Franco - Canadian Trade Agreement of 1933 applied to Togo. GATT effective March 20, 1964. (Exchange of most-favoured-nation treatment.)

Tunisia. Trade Agreement in force August 8, 1972. Tunisia acceded to GATT provisionally in 1959. (Exchange of most-favoured-nation treatment.)

Turkey. Exchange of notes in effect March 15, 1948. GATT effective October 17, 1951. (Exchange of most-favoured-nation treatment.)

Union of Soviet Socialist Republics. Trade Agreement effective from April 1972 to April 1976. (Exchange of most-favoured-nation treatment and annual consultation.)

United States of America. Trade Agreement of November 17, 1938 suspended as long as both countries continue to be contracting parties to GATT. GATT effective January 1, 1948. (Exchange of most-favoured-nation treatment.)

Upper Volta. Franco - Canadian Trade Agreement of 1933 applied to Upper Volta. GATT effective August 5, 1960. (Exchange of most-favoured-nation treatment.)

Uruguay. Trade Agreement in force May 15, 1940. Additional protocol signed October 19, 1953. GATT effective December 16, 1953. (Exchange of most-favoured-nation treatment.)

Venezuela. Modus vivendi in force October 11, 1950. (Exchange of most-favoured-nation treatment. Made for one year subject to annual renewal.)

Viet-Nam. Franco - Canadian Trade Agreement of 1933 applied to Viet-Nam. (Since 1955, Canada has continued to accord most-favoured-nation rates.)

Yemen, People's Republic of. Yemen maintains de facto application of GATT. (Exchange of most-favoured-nation treatment.)

Yugoslavia. Trade Agreements Act of June 11, 1928 accepted Article 30 of UK - Serb - Croat - Slovene Treaty of Commerce and Navigation in force August 9, 1928. GATT effective August 25, 1966. (Exchange of most-favoured-nation treatment.)

Zaire (formerly Congo, Kinshasa). Belgo - Canadian Convention of Commerce of 1924 applied to Congo (Kinshasa). GATT effective September 11, 1971. (Exchange of most-favoured-nation treatment.)

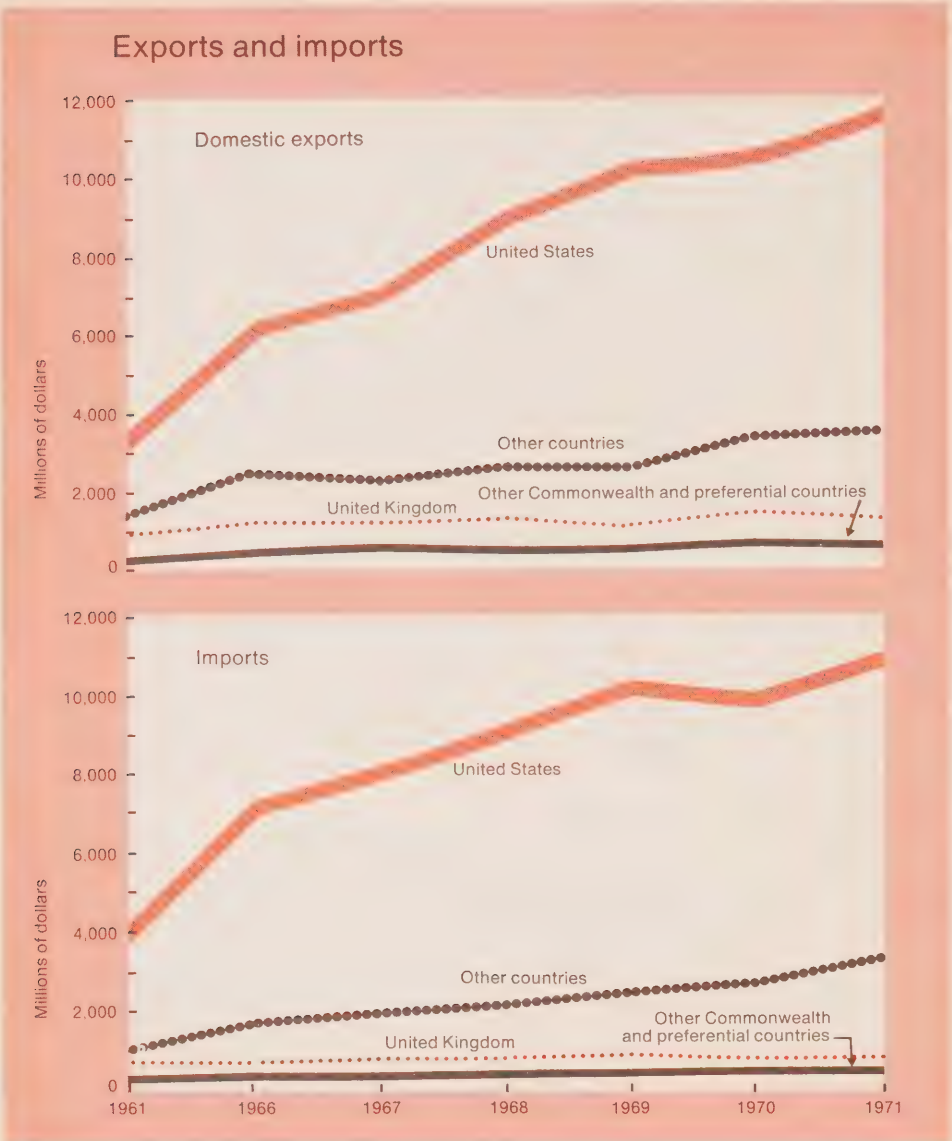
18.3 International trade statistics

Canadian foreign trade statistics are compiled from information recorded on customs documents received by Statistics Canada from customs ports, supplemented with energy data obtained through other channels. Trade figures reflect the physical movements of goods across Canada's national and customs boundaries but do not always represent the financial transactions for changes in ownership of these goods.

Coverage. Total Canadian exports are the sum of domestic exports and re-exports. Domestic exports include shipments abroad of goods wholly produced in Canada together with exports of previously imported goods which have been changed in form by further processing in Canada. Re-exports or exports of foreign produce include only goods previously included in import statistics which are exported from Canada in the same form as when imported. Minor operations such as cleaning, sorting and repacking are not considered as changing the condition of imported goods. Following the introduction in January 1964 of the "General trade" system of compilation, re-exports have also included outward movements of goods previously imported but stored in customs warehouses.

Imports, as from January 1964, include all goods cleared by customs immediately on arrival in Canada together with goods that are entered into customs warehouses. For earlier years, imports under the "Special trade" system of presentation included goods cleared immediately on arrival plus goods cleared for consumption out of customs warehouses. This meant that those goods which crossed the national boundary into and out of customs warehouses without crossing the customs boundary were excluded.

Since January 1960 certain commodities have been excluded from both export and import trade statistics but have been published monthly under "Special transactions - non-trade". This category includes commodity movements which either have no international financial implications or are better considered as non-merchandise transactions in the statistics of Canada's balance of international payments. These are: unrefined gold, gold products where the gold content is 80% or more of the total value, and gold coin, except collections; settlers'



effects; private donations and gifts; tourist purchases; goods shipped back and forth across the national boundary by the diplomatic and military personnel of Canada and of foreign countries posted abroad and in Canada, respectively; temporary movements for exhibition or competition, including films for processing; bunker supplies and stores sold to foreign vessels or aircraft in Canada or purchased by Canadian carriers abroad; military grants to NATO member countries; ships of British construction and registry imported for use in Canada, and ships purchased for use as international carriers but not used to carry goods between points in Canada; and generally, all temporary exports and imports and goods merely moving in transit through Canadian territory.

The series "Gold production available for export", which is an item of non-merchandise transactions in the current account of the Canadian balance of international payments, is covered in Chapter 21.

Valuation. Export documents define the valuation to be used as f.o.b. (free on board) place of lading, i.e., point of production for the majority of commodities, Vancouver and St. Lawrence ports for grain and oil seeds and the latter for iron ore. The value of goods imported is usually the value as determined for customs purposes based on the fair market value or the selling price, whichever is higher. For entries exceeding \$50,000 in value, however, the selling price is, with certain exceptions, compiled. In the majority of cases, import documents define the valuation to be used as f.o.b. points of shipment in the country of export; however, where importers report c.i.f. (cost, insurance, freight), care is taken to compile f.o.b. values.

Classification. Beginning with statistics for January 1961 and January 1964, detailed commodity statistics for exports and imports, respectively, have been compiled according to revised classifications, on the basis of the Standard Commodity Classification developed by Statistics Canada as a tool for integrating statistical series derived from different sources. The revised classifications place commodities in sections mainly according to stage of processing and purpose, as follows: Live animals; Foods, feed, beverages and tobacco; Crude materials, inedible; Fabricated materials, inedible; End products, inedible; and Special transactions – trade. Previously, commodities were classified primarily according to the material of which they were chiefly composed.

Trade is classified to countries on the basis of consignment. Exports are considered to be consigned to the country to which they are shipped when they leave Canada, i.e., the farthest known destination. Imports are classified to the country from which goods are shipped to Canada, except for goods produced in Central or South America but consigned to Canada from the United States; these goods are credited to the country of origin.

Statistics are compiled and presented for some 150 individual countries, arranged primarily according to geographical location, but also grouped because of common political heritage and tariff arrangements, such as Commonwealth and preferential countries, and of economic links, such as the European Economic Community.

Discrepancies in trade statistics between Canada and other countries. Canada's statistics of exports are rarely in exact agreement with the import statistics of its customers and parallel differences occur with Canadian imports. Major factors contributing to these discrepancies include: differences in the system of valuation used by Canada and those of other countries, with respect to the treatment of transportation charges, fair market and transaction values; differences in the statistical treatment of special categories of trade, such as military supplies, government-financed gifts of commodities, postal and express shipments, tourist purchases, bunkers and warehouse trade; differing definitions of territorial areas; differing systems of crediting trade by countries, notably the consignment system used by Canada and the actual origin or ultimate destination system in use in some other countries; and differences in the time at which trade is recorded in the statistics of partner countries caused by the time required for goods to move from one country to another.

Table 18.1 summarizes total international trade of Canada for selected years 1956-71 and shows the balance of trade for each year. In 1956, Canada's imports exceeded exports by \$713.2 million; since then, a favourable balance of trade has been maintained although with some fluctuation from year to year. The excess of exports over imports reached a high of \$2,868.2 million in 1970, dropping to \$2,137.0 million in 1971.

18.3.1 Trade by geographic region

Table 18.2 shows the importance to the Canadian economy of trade with the US. Exports to the US in 1961 constituted 54.0% of the total, to the UK 15.8%, to other Commonwealth and preferential countries 5.7%, and to all other countries 24.5%. By 1971, exports to the US had increased to 67.3% of the total while those to the UK had been halved to 7.8%; exports to other Commonwealth and preferential countries and all other countries declined to 3.9% and 21.0%, respectively. The proportion of Canadian imports from the US increased from 67.0% to 70.1% over the ten-year period and decreased from 10.7% to 5.4% for the UK and from 5.1% to 4.0% for Commonwealth and other preferential countries; imports from all other countries showed an increase from 17.2% to 20.5% of the total.

Table 18.3, giving Canadian exports and imports by the 30 leading countries in 1971, shows that over the period 1969-71 the United States, United Kingdom, Japan and Federal Republic of Germany were Canada's main trading partners. In 1971 exports to the

Netherlands maintained fifth place, while those to Italy rose to sixth place from eighth and to the People's Republic of China to seventh place from eleventh. Imports from Venezuela continued in fifth place and those from France, sixth; with only slight changes in order, Australia, Sweden and Switzerland maintained eighth, ninth and tenth places over the period.

Values of domestic exports and imports, by geographic region and country, for 1968-71, are shown in Table 18.4, and of dutiable and free imports for 1969-71 in Table 18.5.

18.3.2 Trade by commodity

Detailed information on the composition of Canada's exports for 1970 and 1971 is given in Table 18.6. In both years, exports in the Fabricated materials, inedible, and the End products, inedible, sections each made up roughly one third of the total. Approximately 19% of the former section was newsprint paper in both 1970 and 1971, 78.6% of which went to the US in 1970 and 81.2% in 1971, followed by wood pulp and similar pulp which made up more than 13%.

In the End products, inedible, section, passenger automobiles and chassis made up 30.5% in 1970, increasing to 33.2% in 1971, almost all of which went to the US. Trucks, truck tractors and chassis, motor vehicle engines and parts, and motor vehicle parts combined accounted for an almost equal amount. Crude materials, inedible, made up the third most valuable export, accounting for 18.7% in each year. Food, feed, beverages and tobacco at \$1,800.3 million in 1970 and \$2,035.3 million in 1971, comprised 11.0% and 11.8%, respectively, of total exports, 33.6% of which went to the US in 1970 and 29.5% in 1971.

Table 18.7 gives details of Canada's imports for 1970 and 1971. As with exports, imports of Fabricated materials, inedible, and End products, inedible, made up the larger part in both years. Crude materials, inedible, accounted for about 8.5% and Food, feed, beverages and tobacco for some 7.5%.

18.3.3 Trade by section and stage of fabrication

Tables 18.8 and 18.9 present historical series of Canada's external trade for selected years 1956-71 by section and stage of fabrication. Estimates for the years prior to 1958 are subject to some limitations because of the introduction of the revised commodity trade classifications in the early 1960s.

Methodology. To allocate exports and imports into the statistical framework based on stage of fabrication, i.e., crude materials, fabricated materials and end products, requires a secondary classification of the commodities in certain sections of the standard commodity classification (SCC). Live animals (Section I), being a natural product, are considered as crude materials. Section II (Food, feed, beverages and tobacco) is distributed as follows: crude materials include natural products not processed beyond cleaning or preparation for shipment, such as fresh fruits and vegetables, raw sugar, etc.; fabricated materials include commercial feed stocks and commodities which are further processed rather than used for direct consumption; and end products comprise prepared pet feeds and commodities which require no further processing but are used directly for consumption, such as cheese, canned foods, whisky, cigars and cigarettes. Sections III, IV and V are as defined in the SCC. Thus, Section V (Inedible end products) consists of articles rather than materials, i.e., finished commodities which have attained their final degree of processing together with specific parts and accessories of machinery which are classified with the machinery. Section VI (Special transactions — trade), which contains comparatively few classes, has been distributed on the basis of special studies.

Exports. Canada's exports followed a steady upward trend over the 15-year period 1956-71. The acceleration in the growth of domestic exports in the period 1961-66 was followed by a somewhat slower growth during the next five-year period. Exports of manufactured goods recorded much higher rates of increase than those of crude materials and end products and increased more rapidly to the US than to all other countries. Domestic exports by section and stage of fabrication, 1956-71 are presented in Table 18.8; average annual rates for major categories are given in Table 18.10.

Imports. At 7.2%, imports rose slightly less than exports over the same period, 1956-71, with interruptions in growth in the second half of the 1950s and in 1970. The sharp acceleration in the growth rate of imports in the years 1961-66 was followed by a moderating trend in the following period 1966-71. Values of domestic imports are shown in Table 18.9 and percentage growth rates in Table 18.10.

Unlike export trade, the growth of import trade with the United States has been slower than with all countries. In 1971, exports and imports reached new highs of \$17,743.6 million and \$15,606.6 million, respectively. Moderately rising demand from the United States and weaker overseas markets, along with a sharp rise in Canadian import demand, reduced the trade balance from \$2,868.2 million to \$2,137.0 million.

18.4 International travel

Travel between Canada and other countries grew at a slower rate in 1971. Both receipts and payments from international travel increased by less than 5%, compared with gains of close to 15% a year earlier, and receipts rose at a slightly higher rate than payments, reducing the deficit on travel account. The growth in travel in 1971 was dampened to a greater degree in North America than in Europe, where rapid growth rates were experienced for the second consecutive year. Travel earnings for both Canada and the United States advanced by less than 7%, while European countries registered substantial gains of about 20%. In Japan, travel receipts declined following the World Exposition in Osaka by a rate identical to that experienced in Canada after Expo 67.

Since 1961, non-resident travellers visiting Canada have increased by 10 million, approaching a total of 39 million in 1971. Non-residents staying one or more nights, who account for the greater proportion of expenditures, numbered 15 million in 1971. Canadian travel receipts, in turn, have increased almost threefold since 1961, reaching \$1,283 million. Receipts in 1971 accounted for just under 6% of the total current receipts in the balance of payments, virtually unchanged since 1961. Compared with other major countries, Canada ranked sixth in travel earnings from non-resident visitors in 1971. Those countries ranking ahead of Canada were, in order, the United States, Spain, Italy, the Federal Republic of Germany and France. Austria and the United Kingdom ranked closely behind Canada.

The number of Canadian residents returning from visits abroad over the past ten years has increased by 20% to a total of 35 million in 1971. The number of long-term travellers has doubled over the same period to a total of 11 million. Canadian travel payments have more than doubled the 1961 figure and reached a record high of \$1,494 million. Internationally, Canada ranked third in total resident travel expenditures abroad, behind the United States and the Federal Republic of Germany but ahead of France and the United Kingdom.

The share of disposable income on foreign travel at about 2.5% has not significantly changed since 1961. Per capita expenditures on Canadian travel abroad, in terms of current dollars, have increased steadily from \$35 in 1961 to \$69 in 1971.

Travel between Canada and the United States. The growth in travel receipts from United States residents levelled off in 1971 with a gain of only 4% compared with increases of 13% and 8% in the two previous years. The slower rate of growth may be a reflection of the uncertain economic climate prevailing in 1971 and of the appreciation of the Canadian dollar, which moved close to parity in terms of the United States dollar.

The number of United States travellers visiting Canada in 1971 totalled 38.4 million, 3.5% more than in the previous year. Travellers entering Canada and leaving the same day numbered 24.1 million while the remaining 14.3 million stayed one or more nights in Canada.

The private car remained the dominant form of transportation (86%) for United States residents visiting Canada; about 12.8 million automobiles with 33.2 million visitors were reported entering Canada during 1971. The rate of growth in air travel stabilized in 1971 following substantial increases in 1970 and 1969, and bus travel grew at the rate of 14%, while rail travel was affected by the closure of services through various ports across the country.

The travel characteristics of United States visitors to Canada remained basically similar to those in 1970. The majority of travellers originated from the Middle Atlantic and East - North - Central regions, and the main destinations reported by respondents to survey questionnaires were Ontario and Quebec. The prime reasons for coming to Canada were recreation and visits to friends or relatives, and the main type of lodging used while in Canada remained hotels, motels and resorts; the average length of stay of long-term travellers was about five nights.

Canadian visits to the United States in 1971 numbered 34.3 million, down from 35.7 million in 1970, as the result of 6.1% fewer short-term visits to the United States. Canadian residents staying one or more nights in the United States increased 2% from 1970.

The automobile remained the preferred mode of transportation in travel to the United States, 86% of the total re-entries and 80% of those staying one or more nights in 1971. Travel

international travel account



by air, although only 4% of the total and 12% of the long-term traffic, has increased at a faster pace in recent years.

An examination of travel payments (including passenger fares paid to United States carriers) in relation to the population of Canada shows that Canadians spent \$40 per capita on travel in the United States. The ratio fluctuated between a high of \$47 per resident of Ontario to a low of \$17 per resident of Saskatchewan.

As in 1970, Canadian travellers staying one or more nights in the United States during 1971 remained an average of eight days and spent an average of \$11 per day. Half of these travellers visited the New England and Middle Atlantic regions; almost 60% reported holidays as the main reason for their visit, and 50% used resorts, hotels or motels.

Summary statistics are given in Tables 18.11-18.13.

Travel between Canada and overseas countries. Overseas visitors to Canada in 1971 numbered 543,000, a 1.4% increase over the previous year. Estimated receipts in 1971 totalled \$154 million, including \$53 million in transportation fares paid to Canadian carriers, compared with \$152 million in total spending in 1970 (Table 18.14).

Total receipts in 1971 equalled the record spending of overseas visitors during Canada's centennial year. An analysis of previous years' data reveals that since 1950 the growth in receipts has been linear and has doubled approximately every seven years.

Overseas visitors from the United Kingdom comprised 27.7% of the total compared with 29.5% in 1970. Visitors from OECD countries in Europe accounted for 36.5% of total entries, unchanged from the previous year; 41.9% of this group were residents of the Federal Republic of Germany or France.

Estimated expenditures by area of residence indicate that visitors from the United Kingdom spent \$42 million in 1971 compared to \$44 million the previous year. Visitors from the other OECD countries in Europe spent \$54 million in 1971, a slight increase over 1970.

Overseas visitors remained in Canada an estimated 9.8 million nights, a 7.4% decrease from 1970, the average stay decreasing from 19.7 nights to 18.0. Average expenditure per trip decreased from \$192 to \$186, a reflection in part of the decrease in length of stay. Of total entries from overseas 80.8% were classified as tourists and visitors, and 45.8% indicated Ontario as their province of destination, 28.5% named Quebec and 14.7% British Columbia.

The growth in Canadian resident travel to overseas countries continued in 1971 as lower fares continue to lure more Canadians abroad. In 1971, 1,197,200 Canadian residents returned from visits to overseas countries, an 8.9% increase over the previous year. Total expenditure of Canadian residents was \$550 million, including international fare payments to foreign carriers, compared to \$524 million spent in 1970.

Questionnaire response shows that 20% of total Canadian resident travellers re-entering from abroad gave the United Kingdom only as their main destination. Residents of Canada returning from trips to other OECD countries in Europe only accounted for 21.0% of total re-entries, and Bermuda and the Caribbean accounted for 18.0%.

Total person nights in 1971 numbered 30.0 million, a 2.8% increase over the previous year. The average stay decreased from 26.6 nights in 1970 to 25.1 in 1971, and the total of nights stayed has approximately doubled since 1968. The average expenditure in 1971 was \$341 compared with \$352 a year earlier, and does not include international transportation fares, which have been excluded for the calculations; the average expenditure has changed only marginally since 1968, when it was \$350.

The majority of Canadian residents returning from overseas countries indicated holiday and recreation as the main purpose of their trip. In 1971 this group accounted for 61.4% of total re-entries from abroad compared with 57.4% in 1970, and those residents visiting friends and relatives accounted for 26.1% of total re-entries compared with 29.7% in the previous year.

Sources

- 18.1 Information Services Branch, Department of Industry, Trade and Commerce.
- 18.2.1 Information Services Branch, Department of National Revenue.
- 18.2.2 Information Services Branch, Department of Industry, Trade and Commerce.
- 18.3 External Trade Division, General Statistics Branch, Statistics Canada.
- 18.4 Financial Flows and Multinational Enterprise Division, System of National Accounts (Current) Branch, Statistics Canada.

Tables

.. not available
... not appropriate or not applicable
— nil or zero
-- too small to be expressed

e estimate
p preliminary
r revised
certain tables may not add due to rounding

18.1 Value of total international trade of Canada, selected years 1956-71 (thousand dollars)

Year	Exports			Imports			Balance of trade, excess of exports (+) imports (-)
	Domestic	Re-exports	Total	Dutiable	Free	Total	
1956	4,760,442	73,335	4,833,777	3,292,516	2,254,435	5,546,951	-713,175
1961	5,754,986	140,229	5,895,215	3,115,408	2,653,170	5,768,578	+126,637
1966	10,070,627	254,693	10,325,320	4,831,709	5,034,730	9,866,439	+458,881
1967	11,120,674	299,283	11,419,957	5,096,920	5,978,279	11,075,199	+344,759
1968	13,269,935	354,078	13,624,013	5,029,260	7,328,734	12,357,994	+1,266,022
1969	14,462,424	427,647	14,890,071	5,907,203	8,223,172	14,130,375	+759,696
1970	16,401,091	419,007	16,820,098	5,909,639	8,042,264	13,951,903	+2,868,195
1971	17,320,805	422,773	17,743,578	6,527,261	9,079,328	15,606,589	+2,136,989

18.2 Trade of Canada with Commonwealth and preferential countries, and other countries, selected years 1961-71

Item and year	United Kingdom		Other Commonwealth and preferential countries		United States		Other countries	
	Value \$'000	% of total	Value \$'000	% of total	Value \$'000	% of total	Value \$'000	% of total
Domestic exports								
1961	909,344	15.8	328,854	5.7	3,107,176	54.0	1,409,612	24.5
1966	1,122,574	11.1	547,420	5.4	6,027,722	59.9	2,372,911	23.6
1967	1,169,053	10.5	638,201	5.8	7,088,490	63.7	2,224,930	20.0
1968	1,209,567	9.1	593,093	4.5	8,941,501	67.4	2,525,774	19.0
1969	1,091,236	7.5	588,858	4.1	10,237,742	70.8	2,544,588	17.6
1970	1,465,155	8.9	762,218	4.6	10,579,937	64.6	3,593,781	21.9
1971	1,345,805	7.8	676,373	3.9	11,664,642	67.3	3,633,985	21.0
Imports								
1961	618,221	10.7	292,155	5.1	3,863,968	67.0	994,233	17.2
1966	644,741	6.5	416,293	4.2	7,135,610	72.4	1,669,795	16.9
1967	673,050	6.1	435,291	3.9	8,016,341	72.4	1,950,517	17.6
1968	696,094	5.6	452,998	3.7	9,048,372	73.2	2,160,530	17.5
1969	790,973	5.6	571,829	4.0	10,243,242	72.5	2,524,331	17.9
1970	738,262	5.3	621,239	4.5	9,917,045	71.0	2,675,357	19.2
1971	837,258	5.4	622,487	4.0	10,941,233	70.1	3,205,611	20.5

18.3 Trade of Canada by leading countries, 1971 with comparable figures for 1969 and 1970 (thousand dollars)

Rank			Item and country	1969	1970	1971
1969	1970	1971				
			DOMESTIC EXPORTS			
1	1	1	United States	10,237,742	10,579,937	11,664,642
2	2	2	United Kingdom	1,091,236	1,465,155	1,345,805
3	3	3	Japan	624,733	810,142	828,647
4	4	4	Germany, Federal Republic of	277,382	383,681	314,937
5	5	5	Netherlands	184,966	277,189	232,336
7	8	6	Italy	133,671	183,961	207,555
9	11	7	China, People's Republic of	122,891	141,995	204,053
11	9	8	Norway	103,645	178,056	185,802
6	6	9	Australia	163,258	197,750	179,962
10	7	10	Belgium and Luxembourg	116,232	189,943	178,628
8	10	11	France	128,583	154,201	153,095
12	12	12	India	95,552	129,842	142,405
38	15	13	Union of Soviet Socialist Republics	9,071	101,553	125,812
13	13	14	Venezuela	92,902	111,391	119,934
18	17	15	Brazil	50,246	87,387	92,516
15	16	16	Mexico	72,873	91,698	78,984
17	18	17	Spain	55,908	64,506	64,135
14	14	18	South Africa, Republic of	78,501	104,005	62,828
26	28	19	Peru	26,234	35,900	61,187
20	20	20	Cuba	40,739	58,900	56,069
16	19	21	Argentina	62,315	59,129	48,914
23	22	22	Puerto Rico	36,976	48,515	47,241
19	23	23	Sweden	41,278	47,735	43,430
25	29	24	Philippines	32,328	30,154	39,359
21	24	25	Jamaica	40,481	46,545	39,172
28	21	26	Pakistan	22,142	55,799	35,843
24	27	27	Switzerland	34,239	37,296	35,072
22	25	28	New Zealand	36,976	42,691	34,614
1	1	29	Iraq	2,792	4,184	32,459
40	39	30	Algeria	2,948	19,138	30,407
			Total, 30 leading countries	14,018,840	15,738,378	16,685,843
			Total, domestic exports	14,462,424	16,401,091	17,320,805

18.3 Trade of Canada by leading countries, 1971 with comparable figures for 1969 and 1970 (thousand dollars) (concluded)

Rank	Item and country			1969	1970	1971
1969	1970	1971				
IMPORTS						
1	1	1	United States	10,243,242	9,917,045	10,941,233
2	2	2	United Kingdom	790,973	738,262	837,258
3	3	3	Japan	495,704	581,715	801,864
4	4	4	Germany, Federal Republic of	354,715	370,931	429,417
5	5	5	Venezuela	345,596	339,212	387,664
6	6	6	France	151,841	158,486	213,092
7	8	7	Italy	141,193	144,973	157,473
8	7	8	Australia	96,285	146,148	125,671
9	9	9	Sweden	84,506	105,888	113,294
10	10	10	Switzerland	83,930	80,831	86,180
19	14	11	Taiwan	42,456	51,936	80,706
12	12	12	Hong Kong	72,942	78,486	80,188
11	11	13	Netherlands	78,678	78,923	76,374
27	26	14	Iran	30,176	33,880	66,642
14	15	15	Belgium and Luxembourg	60,936	51,695	58,981
32	21	16	Nigeria	22,203	44,558	57,242
17	20	17	South Africa, Republic of	45,944	45,702	54,590
18	17	18	Norway	44,895	49,132	53,195
20	16	19	Brazil	42,128	49,311	50,698
13	18	20	Mexico	64,084	47,344	50,162
22	23	21	India	40,905	40,096	44,610
23	19	22	Austria	38,878	45,614	42,843
15	13	23	Netherlands Antilles	50,395	54,178	41,798
21	22	24	New Zealand	41,182	43,064	40,254
29	24	25	Spain	28,714	34,460	38,546
25	27	26	Denmark	32,392	30,495	34,700
37	29	27	Colombia	14,565	26,589	32,114
28	30	28	Czechoslovakia	30,046	27,491	30,700
16	31	29	Jamaica	45,978	27,067	28,551
31	32	30	Saudi Arabia	26,751	24,075	27,216
Total, 30 leading countries				13,642,233	13,467,587	15,083,256
Total, imports				14,130,375	13,951,903	15,606,589

¹ Not ranked.

18.4 Values of domestic exports and imports, by geographic region and country, 1968-71 (thousand dollars)

Region and country	Domestic exports				Imports			
	1968	1969	1970	1971	1968	1969	1970	1971
WESTERN EUROPE								
United Kingdom	1,209,567	1,091,236	1,465,155	1,345,805	696,094	790,973	738,262	837,258
Gibraltar	39	26	21	21	—	—	2	—
Ireland	11,124	13,949	14,348	12,702	9,675	11,102	13,159	13,801
Malta and Gozo	814	1,951	1,517	1,760	594	1,458	808	437
Austria	6,008	9,067	8,855	8,607	28,563	38,878	45,614	42,843
Belgium and Luxembourg	126,648	116,232	189,943	178,628	57,520	60,936	51,695	58,981
Denmark	15,579	15,010	21,024	22,127	26,393	32,392	30,495	34,700
Finland	7,058	7,177	7,898	11,228	4,234	12,610	25,784	15,736
France	81,516	128,583	154,201	153,095	121,647	151,841	158,486	213,092
Germany, Federal Republic of	228,733	277,382	383,681	314,937	298,869	354,715	370,931	429,417
Greece	8,904	10,265	23,965	10,743	3,259	4,335	4,996	6,052
Iceland	298	385	416	659	13	34	65	144
Italy	131,210	133,671	183,961	207,555	114,492	141,193	144,973	157,473
Netherlands	178,850	184,966	277,189	232,336	69,052	78,678	78,923	76,374
Norway	116,559	103,645	178,056	185,802	39,204	44,895	49,132	53,195
Portugal	6,310	7,039	10,606	13,376	12,321	13,648	13,966	18,754
Spain	41,114	55,908	64,506	64,135	25,626	28,714	34,460	38,546
Sweden	31,744	41,278	47,735	43,430	78,091	84,506	105,888	113,294
Switzerland	31,197	34,239	37,296	35,072	64,326	83,930	80,831	86,180
Total, Commonwealth and preferential countries	1,221,544	1,107,161	1,481,041	1,360,288	706,363	803,533	752,231	851,496
European Economic Community	746,957	840,834	1,188,975	1,086,551	661,581	787,363	805,008	935,337
Other countries	264,771	284,014	400,358	395,179	282,031	343,941	391,229	409,444
Total, Western Europe	2,233,271	2,232,010	3,070,374	2,842,018	1,649,975	1,934,836	1,948,469	2,196,277
EASTERN EUROPE								
Albania	2,793	3,655	4,163	4,024	—	—	4	—
Bulgaria	79	105	3,328	872	1,602	1,316	1,101	1,237
Czechoslovakia	12,394	3,770	6,872	6,054	27,367	30,046	27,491	30,700
German Democratic Republic	1,206	1,846	376	731	2,927	3,481	3,605	4,175
Hungary	12,333	2,882	6,888	4,554	7,942	9,184	9,192	7,230
Poland	18,240	6,554	15,161	18,023	13,351	12,408	12,029	15,259
Romania	1,212	1,221	3,502	10,589	1,884	7,142	5,086	8,892
Union of Soviet Socialist Republics	88,569	9,071	101,553	125,812	21,659	12,302	9,074	12,647
Yugoslavia	6,551	8,023	26,917	20,917	4,725	5,632	7,248	8,043
Total, Eastern Europe	143,378	37,127	168,759	191,575	81,457	81,510	74,830	88,183

18.4 Values of domestic exports and imports, by geographic region and country, 1968-71 (thousand dollars) (continued)

Region and country	Domestic exports				Imports			
	1968	1969	1970	1971	1968	1969	1970	1971
MIDDLE EAST								
Bahrain	221	86	76	153	5	—	—	592
Cyprus	443	494	901	1,487	345	298	251	512
Qatar	132	158	81	190	—	—	—	4
Southern Yemen	66	12	4	10	18	404	28	1,429
Trucial States	445	4,169	301	1,564	4,626	14,922	7,162	4,879
Ethiopia	294	257	397	206	85	43	44	45
Iran	6,567	5,225	7,943	17,462	33,569	30,176	33,880	66,642
Iraq	882	2,792	4,184	32,459	554	8,838	14,409	17,119
Israel	9,827	16,975	14,446	19,603	12,889	15,067	14,469	15,419
Jordan	300	645	382	144	4	—	1	1
Kuwait	2,527	1,706	1,031	1,137	3,864	6,072	7,040	17
Lebanon	3,383	3,524	4,882	4,932	409	854	910	994
Libya	826	2,364	3,142	1,618	—	8,873	10	6,195
Saudi Arabia	4,057	3,618	6,662	5,158	36,187	26,751	24,075	27,216
Somalia	19	34	22	78	—	—	—	—
Sudan	2,052	499	1,437	1,209	192	304	156	143
Syria	4,679	910	18,636	20,233	42	5	9	250
Turkey	13,242	18,912	21,492	27,008	1,697	3,646	1,469	1,362
United Arab Republic	3,242	2,942	37,778	10,158	380	1,144	422	272
Total, Commonwealth and preferential countries	1,306	4,919	1,362	3,404	4,995	15,624	7,441	7,416
Total, other countries	51,897	60,402	122,433	141,405	89,872	101,774	96,894	135,675
Total, Middle East	53,203	65,321	123,795	144,809	94,868	117,398	104,335	143,091
OTHER AFRICA								
Gambia	165	148	156	89	—	—	453	290
Ghana	5,075	5,100	6,076	8,167	11,073	7,549	6,996	7,625
Kenya	1,884	2,375	1,455	7,037	4,352	5,624	5,672	3,912
Malawi	218	294	380	276	1,033	538	433	808
Mauritius and Dependencies	354	199	378	252	7,972	14,129	14,831	11,502
Nigeria	3,809	4,169	8,160	9,799	16,966	22,203	44,558	57,243
Sierra Leone	164	538	912	99	—	144	1	467
South Africa, Republic of	68,341	78,501	104,004	62,828	39,315	45,944	45,702	54,590
Southern Rhodesia	24	2	15	2	2	1	1	2
Tanzania	1,163	637	633	4,365	4,535	3,829	4,034	2,788
Uganda	1,299	839	1,121	693	9,930	6,657	7,832	5,532
Zambia	1,939	1,504	4,967	3,986	3	91	14	7
Commonwealth Africa, n.e.s.	10	122	316	60	11	2,871	3,623	4,422
Algeria	7,309	2,948	19,138	30,407	139	43	195	348
Angola	377	386	628	862	7,743	6,175	9,634	24,478
Cameroon	385	853	1,044	3,091	107	—	740	2,296
Congo (Kinshasa)	1,637	1,394	2,262	1,749	946	1,341	1,626	2,627
Dahomey	107	826	74	1,063	28	—	—	—
French Africa, n.e.s.	548	2,216	939	1,041	659	76	98	129
Gabon	813	1,000	622	150	56	58	1,340	913
Guinea	284	242	78	217	1,076	101	199	20
Ivory Coast	657	651	995	704	481	4,710	1,289	651
Liberia	1,056	1,340	2,153	1,642	627	928	659	649
Malagasy	145	22	38	3,098	51	122	401	460
Mauritania	300	606	481	182	—	291	—	—
Morocco	4,627	1,463	5,423	5,110	969	447	343	525
Mozambique	2,931	3,006	2,300	2,241	681	905	1,254	2,781
Portuguese Africa, n.e.s.	178	269	315	368	1	—	—	—
Senegal	153	771	554	1,183	14	12	1	18
Spanish Africa	96	209	359	468	1	51	566	—
Togo	436	453	304	1,111	—	3	—	—
Tunisia	1,561	2,584	6,934	5,692	185	20	6	7
Total, Commonwealth and preferential countries	84,446	94,428	128,575	97,652	95,192	109,580	134,149	149,188
Total, other countries	23,598	21,239	44,642	60,379	13,765	15,284	18,352	35,902
Total, other Africa	108,044	115,666	173,218	158,031	108,957	124,864	152,501	185,090
OTHER ASIA								
Ceylon	5,626	3,153	9,311	6,059	9,600	9,279	8,790	8,754
Hong Kong	16,587	17,678	20,753	19,775	58,354	72,942	78,486	80,188
India	111,255	95,552	129,842	142,405	38,304	40,905	40,096	44,610
Malaysia	10,726	15,524	14,003	15,184	25,986	32,824	34,180	26,867
Pakistan	29,689	22,142	55,799	35,843	4,767	7,064	9,964	7,320
Singapore	3,159	4,822	10,797	9,244	15,117	21,967	20,211	18,456
Afghanistan	465	91	263	2,587	4	49	111	152
Burma	740	1,469	2,099	1,956	76	55	2	1
Cambodia and Laos	76	204	653	9	4	1	—	10
China, People's Republic of	163,243	122,891	141,995	204,053	23,439	27,421	19,028	23,302
Indonesia	2,408	2,948	16,489	9,466	445	284	589	1,061
Japan	606,787	624,733	810,142	828,647	360,180	495,704	581,715	801,864

18.4 Values of domestic exports and imports, by geographic region and country, 1968-71 (thousand dollars)
(continued)

Region and country	Domestic exports				Imports			
	1968	1969	1970	1971	1968	1969	1970	1971
OTHER ASIA (concluded)								
Korea, North	—	253	—	7,223	1	—	—	—
Korea, South	13,203	15,331	18,806	23,256	11,241	12,192	14,569	19,420
Philippines	34,546	32,328	30,154	39,359	2,802	4,486	4,329	6,211
Portuguese Asia	52	28	22	8	24	45	43	47
Taiwan	16,893	12,157	18,315	13,947	34,379	42,456	51,936	80,706
Thailand	7,162	8,539	8,006	12,957	2,023	995	1,061	3,011
Viet-Nam	2,168	2,135	3,839	2,828	1	5	13	7
Total, Commonwealth and preferential countries	177,043	158,872	240,505	228,510	152,127	184,982	191,727	186,195
Total, other countries	847,744	823,110	1,050,783	1,146,295	434,618	583,694	673,396	935,792
Total, other Asia	1,024,786	981,981	1,291,288	1,374,805	586,745	768,676	865,123	1,121,987
OCEANIA								
Australia	185,717	163,258	197,750	179,962	75,990	96,285	146,148	125,671
Fiji	910	873	905	841	3,626	5,681	6,899	8,664
New Zealand	31,842	36,976	42,691	34,614	18,645	41,182	43,064	40,254
British Oceania, n.e.s.	235	72	174	143	2	1	—	3
French Oceania	1,693	715	790	1,584	7,534	2,842	2,545	1,275
United States Oceania	948	1,734	1,234	1,233	116	43	82	17
Total, Commonwealth and preferential countries	218,704	201,180	241,521	215,561	98,262	143,149	196,111	174,592
Total, other countries	2,641	2,449	2,023	2,817	7,650	2,885	2,627	1,292
Total, Oceania	221,345	203,629	243,544	218,378	105,912	146,034	198,738	175,884
SOUTH AMERICA								
Falkland Islands	1	13	3	1	5	—	—	—
Guyana	9,291	8,395	12,244	6,595	29,408	31,050	28,770	25,123
Argentina	48,017	62,315	59,129	48,914	5,358	8,644	8,985	7,246
Bolivia	3,478	2,086	2,205	1,704	68	139	136	311
Brazil	48,200	50,246	87,387	92,516	38,725	42,128	49,311	50,698
Chile	20,735	22,837	22,885	13,315	2,138	3,273	2,757	9,330
Colombia	18,376	18,778	24,625	23,216	12,191	14,565	26,589	32,114
Ecuador	3,481	2,596	3,516	3,388	8,549	8,542	10,503	7,415
French Guiana	15	12	18	11	19	—	—	57
Paraguay	717	348	186	361	355	1,100	656	1,611
Peru	22,231	26,234	35,891	61,187	3,156	2,835	4,304	3,479
Surinam	2,037	1,383	1,642	1,473	7,190	8,135	5,423	5,000
Uruguay	2,377	3,351	4,376	3,781	532	313	245	68
Venezuela	102,671	92,902	111,391	119,934	357,862	345,596	339,212	387,664
Total, Commonwealth and preferential countries	9,292	8,408	12,247	6,596	29,413	31,051	28,770	25,123
Total, other countries	272,336	283,087	353,249	369,800	436,145	435,270	448,122	504,993
Total, South America	281,628	291,495	365,496	376,396	465,559	466,322	476,892	530,116
CENTRAL AMERICA AND ANTILLES								
Bahamas	12,772	15,213	16,495	15,167	3,107	4,495	6,457	20,946
Barbados	10,056	8,762	10,972	11,197	1,531	1,497	1,553	2,451
Bermuda	7,134	9,060	11,140	13,035	473	180	187	187
British Honduras	1,343	1,720	1,703	1,557	2,445	2,526	3,031	3,478
Jamaica	34,378	40,481	46,545	39,172	33,935	45,978	27,067	28,551
Leeward and Windward Islands	8,414	10,396	14,024	9,718	1,323	2,464	3,259	2,405
Trinidad and Tobago	16,228	19,492	21,241	20,321	19,927	17,742	7,517	7,717
Costa Rica	2,814	3,190	6,024	5,602	9,664	8,706	12,105	8,744
Cuba	44,988	40,739	58,900	56,069	5,114	7,759	9,511	10,364
Dominican Republic	5,637	6,163	20,470	15,500	1,131	603	1,912	3,114
El Salvador	3,171	4,907	3,409	4,921	3,307	2,093	4,044	3,562
French West Indies	460	641	414	734	4	23	6	8
Guatemala	2,487	3,845	3,567	3,718	3,078	4,949	5,964	4,648
Haiti	2,063	3,694	4,851	4,064	1,229	692	758	1,109
Honduras	1,359	1,098	2,836	2,358	10,474	12,645	13,127	17,631
Mexico	54,589	72,873	91,698	78,984	52,167	64,084	47,344	50,162
Netherlands Antilles	3,079	3,149	4,692	3,148	49,658	50,395	54,178	41,798
Nicaragua	2,179	2,430	2,163	2,229	2,245	1,953	1,139	1,974
Panama	5,521	6,499	7,731	7,972	12,524	13,513	7,658	5,545
Puerto Rico	37,811	36,976	48,515	47,241	2,542	5,098	6,954	7,494
US Virgin Islands	1,343	1,046	1,353	1,205	—	2	16	2,746
Total, Commonwealth and preferential countries	90,325	105,126	122,121	110,166	62,741	74,883	49,071	65,735
Total, other countries	167,501	187,249	256,624	233,747	153,136	172,515	164,716	158,899
Total, Central America and Antilles	257,826	292,375	378,744	343,913	215,876	247,397	213,787	224,634

18.4 Values of domestic exports and imports, by geographic region and country, 1968-71 (thousand dollars) (concluded)

Region and country	Domestic exports				Imports			
	1968	1969	1970	1971	1968	1969	1970	1971
NORTH AMERICA								
Greenland		363	80	142	548	114	12	135
St. Pierre and Miquelon		4,590	4,997	5,793	5,689	159	84	48
United States	8,941,501	10,237,742	10,579,937	11,664,642	9,048,372	10,243,242	9,917,045	10,941,233
Total, North America	8,946,454	10,242,819	10,585,872	11,670,879	9,048,645	10,243,338	9,917,229	10,941,330
Total, Commonwealth and preferential countries	1,802,660	1,680,094	2,227,373	2,022,178	1,149,093	1,362,802	1,359,501	1,459,745
Total, other countries and EEC	11,467,274	12,782,330	14,173,718	15,298,627	11,208,900	12,767,574	12,592,402	14,146,844
Total, all countries	13,269,935	14,462,424	16,401,091	17,320,805	12,357,994	14,130,375	13,951,903	15,606,589

In this table a dash indicates that either there was no trade or the amount was less than \$500.

18.5 Values of dutiable and free imports, by geographic region and leading countries, 1969-71 (thousand dollars)

Region and country	1969			1970			1971		
	Dutiable	Free	Total	Dutiable	Free	Total	Dutiable	Free	Total
WESTERN EUROPE	1,123,888	810,949	1,934,836	1,146,956	801,512	1,948,468	1,315,629	880,648	2,196,277
United Kingdom	351,614	439,360	790,973	366,932	371,330	738,261	406,306	430,952	837,258
Austria	17,015	21,863	38,878	19,069	26,545	45,614	21,553	21,291	42,843
Belgium and Luxembourg	44,826	16,110	60,936	36,237	15,458	51,695	42,304	16,677	58,981
Denmark	23,452	8,940	32,392	21,905	8,590	30,495	24,474	10,225	34,700
France	97,231	54,610	151,841	104,388	54,098	158,486	144,948	68,145	213,092
Germany, Federal									
Republic of	251,313	103,402	354,715	247,059	123,872	370,931	292,539	136,878	429,417
Italy	122,917	18,276	141,193	120,275	24,698	144,973	128,933	28,539	157,473
Netherlands	50,503	28,175	78,678	47,335	31,589	78,923	48,711	27,663	76,374
Norway	9,852	35,043	44,895	7,021	42,110	49,132	9,586	43,609	53,195
Spain	21,644	7,070	28,714	27,974	6,486	34,460	31,752	6,793	38,546
Sweden	50,538	33,968	84,506	53,260	52,627	105,888	66,849	46,445	113,294
Switzerland	51,025	32,905	83,930	53,271	27,560	80,831	59,137	27,042	86,180
EASTERN EUROPE	70,016	11,494	81,510	67,317	7,513	74,830	73,311	14,872	88,183
Czechoslovakia	28,451	1,594	30,046	26,496	996	27,491	29,133	1,567	30,700
Poland	11,446	962	12,408	11,398	631	12,029	14,441	818	15,259
Union of Soviet Socialist Republics	5,681	6,620	12,302	5,958	3,116	9,074	5,016	7,631	12,647
MIDDLE EAST	12,640	104,758	117,398	9,728	94,608	104,335	12,905	130,186	143,091
Cyprus	68	231	298	78	173	251	156	356	512
Southern Yemen	370	34	404	—	28	28	1,413	16	1,429
Trucial States	—	14,922	14,922	—	7,162	7,162	—	4,879	4,879
Iran	860	29,316	30,176	271	33,610	33,880	700	65,942	66,642
Iraq	44	8,794	8,838	1	14,408	14,409	—	17,119	17,119
Israel	9,482	5,585	15,067	7,995	6,474	14,469	9,132	6,287	15,419
Libya	—	8,873	8,873	—	10	10	—	6,195	6,195
OTHER AFRICA	42,952	81,913	124,864	45,466	107,034	152,501	48,259	136,831	185,090
Ghana	162	7,387	7,549	6	6,990	6,996	266	7,359	7,625
Kenya	71	5,553	5,624	105	5,568	5,672	74	3,838	3,912
Mauritius and Dependencies	14,128	1	14,129	14,831	—	14,831	11,502	—	11,502
Nigeria	147	22,056	22,203	146	44,411	44,558	169	57,074	57,243
South Africa, Republic of	22,998	22,947	45,944	24,434	21,268	45,702	29,783	24,808	54,590
Uganda	882	5,776	6,657	1,015	6,817	7,832	6	5,527	5,532
Angola	—	6,175	6,175	—	9,634	9,634	—	24,478	24,478
Ivory Coast	832	3,878	4,710	216	1,072	1,289	278	372	651
OTHER ASIA	611,194	157,482	768,676	705,035	160,088	865,123	949,899	172,090	1,121,987
Hong Kong	70,408	2,534	72,942	75,331	3,155	78,486	76,987	3,200	80,188
India	8,743	32,162	40,905	13,298	26,799	40,096	16,480	28,130	44,610
Malaysia	2,768	30,056	32,824	1,031	33,148	34,180	1,555	25,312	26,867
Singapore	4,163	17,805	21,967	3,476	16,735	20,211	3,756	14,699	18,456
China, People's Republic of	18,893	8,529	27,421	14,837	4,191	19,028	19,185	4,117	23,302
Japan	447,815	47,889	495,704	526,412	55,303	581,715	726,523	75,341	801,864
Korea, South	11,792	401	12,192	14,456	113	14,569	19,197	224	19,420
Taiwan	41,261	1,195	42,456	50,679	1,257	51,936	78,616	2,091	80,706

18.5 Values of dutiable and free imports, by geographic region and leading countries, 1969-71 (thousand dollars) (concluded)

Region and country	1969			1970			1971		
	Dutiable	Free	Total	Dutiable	Free	Total	Dutiable	Free	Total
OCEANIA	98,242	47,792	146,034	120,773	77,965	198,738	107,054	68,830	175,884
Australia	58,994	37,291	96,285	79,715	66,432	146,148	65,561	60,110	125,671
Fiji	5,600	81	5,681	5,936	963	6,899	7,790	874	8,664
New Zealand	33,604	7,578	41,182	35,040	8,025	43,064	33,683	6,571	40,254
French Oceania	—	2,842	2,842	—	2,545	2,545	—	1,275	1,275
SOUTH AMERICA	96,636	369,685	466,322	90,422	386,470	476,892	62,315	467,801	530,116
Guyana	3,890	27,161	31,050	2,931	25,839	28,770	1,554	23,569	25,123
Argentina	6,190	2,454	8,644	5,623	3,363	8,985	4,154	3,093	7,246
Brazil	7,236	34,893	42,128	13,854	35,458	49,311	14,919	35,779	50,698
Colombia	3,010	11,555	14,565	1,745	24,844	26,589	2,699	29,415	32,114
Ecuador	7,089	1,453	8,542	7,798	2,705	10,503	5,658	1,758	7,415
Surinam	8	8,127	8,135	5	5,418	5,423	—	5,000	5,000
Venezuela	67,521	278,075	345,596	57,350	281,862	339,212	31,410	356,254	387,664
CENTRAL AMERICA AND ANTILLES	135,244	112,154	247,398	131,981	81,806	213,787	129,325	95,309	224,634
Jamaica	3,645	42,333	45,978	1,642	25,425	27,067	2,218	26,333	28,551
Trinidad and Tobago	11,042	6,701	17,742	5,868	1,649	7,517	5,302	2,415	7,717
Costa Rica	7,103	1,603	8,706	10,294	1,811	12,105	7,090	1,654	8,744
Cuba	6,977	782	7,759	8,255	1,255	9,511	8,993	1,371	10,364
Honduras	12,307	338	12,645	12,704	422	13,127	17,320	311	17,631
Mexico	20,112	43,974	64,085	17,182	30,161	47,344	16,317	33,846	50,162
Netherlands Antilles	50,125	270	50,395	53,797	382	54,178	37,437	4,361	41,798
Panama	13,103	409	13,513	7,546	111	7,658	4,277	1,268	5,545
NORTH AMERICA	3,716,391	6,526,943	10,243,334	3,591,959	6,325,270	9,917,229	3,831,794	7,109,536	10,941,330
United States	3,716,377	6,526,860	10,243,238	3,591,937	6,325,108	9,917,045	3,831,768	7,109,465	10,941,233
Total, Common-wealth and preferential countries	612,743	750,058	1,362,801	656,262	703,238	1,359,500	702,821	756,924	1,459,745
Total, other countries	5,294,459	7,473,111	12,767,571	5,253,377	7,339,026	12,592,403	5,824,440	8,322,404	14,146,844
Total, imports	5,907,202	8,223,170	14,130,372	5,909,639	8,042,264	13,951,903	6,527,261	9,079,328	15,606,589

In this table a dash indicates that either there was no trade or the amount was less than \$500.

18.6 Domestic exports from Canada to all countries, to the United Kingdom and to the United States, by section and commodity, 1970 and 1971 (thousand dollars)

Section and commodity	All countries		United Kingdom		United States	
	1970	1971	1970	1971	1970	1971
LIVE ANIMALS	68,168	67,341	41	218	55,198	55,903
FOOD, FEED, BEVERAGES AND TOBACCO	1,800,286	2,035,341	257,739	274,840	604,788	600,410
Meat, fresh, chilled or frozen	96,463	98,703	6,158	5,312	78,617	72,640
Other meat and meat preparations	12,586	11,509	58	90	7,805	7,140
Fish, whole or dressed, fresh or frozen	52,343	52,333	4,112	4,317	33,757	28,394
Fish, fillets and blocks, fresh or frozen	91,797	93,423	573	150	90,062	91,055
Fish, preserved, except canned	25,758	30,461	19	—	11,122	12,373
Fish, canned	24,028	29,908	6,751	13,523	2,820	3,253
Shellfish	52,156	59,134	1,604	2,396	45,629	52,503
Dairy produce, eggs and honey	55,481	68,846	11,488	18,261	8,894	5,418
Barley	133,478	195,263	25,623	35,861	12,336	11,610
Wheat	687,431	831,190	92,082	93,860	2,577	2,330
Other cereals, unmilled	22,653	25,195	1,180	1,117	4,763	4,107
Wheat flour	59,765	55,607	4,905	3,883	695	328
Other cereals, milled	13,198	17,112	1,336	2,249	2,668	2,739
Cereal preparations	19,636	19,827	619	130	17,312	17,900
Fruits and fruit preparations	23,316	20,781	2,636	1,734	17,389	16,393
Vegetables and vegetable preparations	51,730	41,003	18,491	14,602	13,505	12,243
Sugar and sugar preparations	20,045	21,117	270	437	16,000	17,241
Other foods and materials for foods	31,595	35,498	6,959	5,485	11,194	13,963
Oil seed cake and meal	16,615	12,951	16,000	11,845	186	240
Other feeds of vegetable origin	28,365	34,668	231	166	21,677	24,165
Other fodder and feed	34,943	32,773	7,082	9,665	20,566	16,893
Whisky	183,140	184,954	380	777	176,575	179,737
Other beverages	7,319	6,551	23	60	6,402	5,734
Tobacco	56,445	56,534	49,161	48,922	2,238	2,012

18.6 Domestic exports from Canada to all countries, to the United Kingdom and to the United States, by section and commodity, 1970 and 1971 (thousand dollars) (continued)

Section and commodity	All countries		United Kingdom		United States	
	1970	1971	1970	1971	1970	1971
CRUDE MATERIALS, INEDIBLE	3,068,220	3,232,028	300,308	306,906	1,625,552	1,734,236
Raw hides and skins	20,335	18,816	753	634	4,589	3,073
Fur skins, undressed	27,617	22,594	6,042	5,520	12,197	8,210
Other crude animal products	15,749	16,058	189	129	14,518	14,655
Seeds for sowing	14,094	13,972	2,256	2,213	9,014	7,480
Flaxseed	55,757	63,849	6,333	6,218	5	171
Rapeseed	79,009	148,211	793	1,010	20	53
Other oil seeds, oil nuts and oil kernels	11,892	14,576	2,922	4,006	4,767	5,385
Other crude vegetable products	22,077	22,146	93	82	19,950	20,118
Pulpwood	26,806	18,953	1,674	391	13,889	10,206
Pulpwood chips	10,746	16,792	1,174	522	9,400	13,073
Other crude wood materials	40,357	28,250	105	60	22,562	16,447
Textile and related fibres	10,112	11,042	175	176	4,404	5,983
Iron ores and concentrates	475,743	413,333	53,719	50,617	312,824	274,790
Scrap iron and steel	33,149	18,492	1,111	361	12,758	11,516
Aluminum ores, concentrates and scrap	19,368	18,197	279	113	13,158	14,338
Copper in ores, concentrates and scrap	261,446	222,833	4,160	1,977	13,665	19,753
Lead in ores, concentrates and scrap	43,200	36,952	570	451	8,710	4,488
Nickel in ores, concentrates and scrap	371,593	395,358	136,332	160,181	68,502	67,926
Precious metals in ores, concentrates and scrap	66,927	64,097	28,856	25,069	23,180	26,373
Zinc in ores, concentrates and scrap	125,364	136,559	3,268	3,430	43,063	29,716
Radioactive ores and concentrates	26,021	17,687	8,990	11,473	17,032	6,213
Other metals in ores, concentrates and scrap	83,762	65,225	17,913	11,979	9,788	5,991
Crude petroleum	649,075	786,851	—	—	649,075	786,851
Natural gas	205,988	250,719	—	—	205,988	250,719
Coal and other crude bituminous substances	29,514	87,041	—	359	1,705	587
Asbestos unmanufactured	227,248	223,925	16,891	17,310	71,970	76,811
Sulphur	44,086	28,206	2,785	870	17,891	11,490
Other crude non-metallic minerals	60,546	58,036	2,893	1,602	35,161	35,100
Other waste and scrap materials	10,639	13,258	33	150	5,771	6,721
FABRICATED MATERIALS, INEDIBLE	5,866,452	5,784,812	799,713	639,004	3,603,442	3,911,713
Leather and leather fabricated materials	10,790	9,489	1,620	1,095	7,635	6,966
Lumber, softwood	638,324	798,739	64,179	43,048	435,625	655,739
Lumber, hardwood	30,395	30,697	2,194	968	24,828	25,822
Shingles and shakes	34,589	46,326	99	103	33,931	45,625
Other sawmill products	8,120	6,788	205	251	7,437	6,220
Veneer	27,829	31,692	575	459	22,155	26,545
Plywood	45,098	39,207	29,774	20,761	2,829	4,737
Other wood fabricated materials	10,691	16,980	1,839	3,174	7,665	12,182
Wood pulp and similar pulp	785,229	796,334	49,541	48,258	485,454	480,724
Newsprint paper	1,110,393	1,084,282	59,596	56,830	872,544	880,682
Other paper for printing	51,235	51,926	3,311	4,133	44,407	45,544
Paperboard	37,078	36,143	21,707	21,611	2,231	3,359
Other paper	66,446	72,477	20,654	18,995	25,264	29,554
Yarn, thread, cordage, twine and rope	17,762	20,064	3,196	6,368	8,525	7,736
Cotton broad woven fabrics	13,916	14,934	8,571	8,628	1,118	2,268
Other broad woven fabrics	9,795	11,820	2,570	2,572	1,588	2,061
Other textile fabricated materials	32,277	36,837	4,578	4,442	15,438	20,693
Oils, fats, waxes, extracts and derivatives	36,908	45,165	18,311	23,725	4,592	5,171
Chemical elements	52,386	42,647	31,691	26,166	16,568	12,920
Other inorganic chemicals	64,959	78,225	11,523	10,306	40,404	55,551
Organic chemicals	67,710	57,618	20,131	14,630	31,638	30,401
Fertilizers and fertilizer materials	221,207	238,426	236	349	177,929	185,176
Synthetic rubber and plastics materials	66,056	75,588	13,516	12,259	23,332	37,916
Plastics basic shapes and forms	20,754	20,785	1,439	1,231	9,620	9,994
Other chemical products	30,798	29,490	1,256	1,367	19,517	17,533
Petroleum and coal products	88,297	116,973	149	725	74,787	105,428
Ferro-alloys	12,664	11,537	6,488	5,529	2,487	1,677
Primary iron and steel	63,655	58,566	1,619	2,170	37,210	35,147
Castings and forgings, steel	57,114	49,103	32	48	54,474	46,050
Bars and rods, steel	57,850	43,307	9,515	3,603	28,918	28,585
Plate, sheet and strip, steel	131,509	131,275	7,297	8,167	80,196	96,792
Railway track material	8,366	7,496	19	88	3,079	3,523
Other iron and steel and alloys	93,553	87,665	338	1,248	77,752	76,811
Aluminum, including alloys	458,638	448,480	109,300	61,024	170,665	218,338
Copper and alloys	474,591	381,469	163,808	111,364	148,623	159,648
Lead, including alloys	45,488	32,044	15,011	10,052	19,760	15,109
Nickel and alloys	434,214	318,992	70,771	71,329	262,389	211,822
Precious metals, including alloys	46,501	29,203	426	340	43,939	26,449
Zinc, including alloys	90,955	80,618	24,874	16,943	35,165	43,549
Other non-ferrous metals and alloys	21,261	11,800	6,175	1,940	9,362	7,088
Metal fabricated basic products	134,871	113,970	4,488	4,185	105,368	81,786
Abrasive basic products	45,777	38,243	2,427	1,897	38,471	32,643
Other non-metallic mineral basic products	49,987	60,566	2,179	2,865	37,722	49,089
Electricity	34,394	48,228	—	—	34,394	48,228
Other fabricated materials, inedible	26,023	22,596	2,486	3,757	16,408	12,829
END PRODUCTS, INEDIBLE	5,566,784	6,170,736	106,899	124,505	4,667,599	5,337,226
Engines and turbines, general purpose	43,835	50,550	495	1,640	23,524	32,361
Electric generators and motors	16,536	18,828	940	649	10,386	8,838
Other general purpose industrial machinery	76,957	79,630	3,396	5,393	47,346	46,594
Materials handling machinery and equipment	69,054	66,345	561	1,937	47,902	45,330
Drilling, excavating, mining machinery	43,336	50,808	1,616	1,130	18,542	29,015

18.6 Domestic exports from Canada to all countries, to the United Kingdom and to the United States, by section and commodity, 1970 and 1971 (thousand dollars) (concluded)

Section and commodity	All countries		United Kingdom		United States	
	1970	1971	1970	1971	1970	1971
END PRODUCTS, INEDIBLE (concluded)						
Metalworking machinery	29,166	35,625	1,890	2,751	20,880	22,277
Woodworking machinery and equipment	25,702	22,238	1,056	939	13,882	11,758
Construction machinery and equipment	18,983	18,276	272	177	11,127	9,057
Plastics industry machinery and equipment	33,798	25,648	915	489	31,653	23,576
Pulp and paper industries machinery	14,250	12,304	110	130	10,855	6,822
Other special industry machinery	40,875	45,453	1,780	1,863	26,038	28,043
Soil preparation, seeding, fertilizing machinery	30,063	25,313	16	145	28,332	23,989
Combine reaper-threshers and parts	54,860	66,184	411	430	51,434	62,688
Other haying and harvesting machinery	39,195	35,431	23	9	37,832	32,673
Other agricultural machinery and equipment	15,446	24,523	117	297	14,410	22,476
Tractors	24,822	23,470	57	52	24,181	22,640
Railway and street railway rolling-stock	35,631	32,962	1	—	20,110	11,097
Passenger automobiles and chassis	1,695,656	2,048,376	43	64	1,622,922	1,989,487
Trucks, truck tractors and chassis	507,389	522,386	1,278	2,574	433,591	460,472
Other motor vehicles	185,537	160,523	246	155	180,493	154,611
Motor vehicle engines and parts	329,217	441,714	1,693	1,004	321,285	438,793
Motor vehicle parts, except engines	781,889	978,352	1,496	2,670	702,585	902,676
Ships, boats and parts	42,183	34,257	1,723	1,859	34,644	25,205
Aircraft, complete with engines	88,470	56,386	—	561	3,066	2,044
Aircraft, engines and parts	109,983	89,820	2,246	6,138	87,722	65,533
Aircraft parts, except engines	180,649	186,024	8,790	14,598	147,798	150,048
Other vehicles	4,619	4,650	1	5	4,392	4,511
Pneumatic tires and tubes	19,890	17,707	109	23	16,024	13,463
Television and radio sets and phonographs	29,834	29,768	99	62	28,297	28,623
Other telecommunication and related equipment	202,329	187,028	20,711	22,642	120,634	120,048
Heating and refrigeration equipment	26,332	24,664	2,381	2,031	19,115	18,401
Cooking equipment for food	5,294	4,932	2,722	2,227	1,205	1,116
Electric lighting and distribution equipment	62,134	65,408	2,773	3,964	40,704	42,680
Navigation equipment and parts	41,886	27,654	652	850	33,875	20,378
Other measuring, controlling, laboratory, medical and optical equipment	66,073	68,480	6,563	6,860	37,897	36,429
Hand tools and miscellaneous cutlery	13,812	16,066	1,347	894	6,073	7,363
Office machines and equipment	114,150	147,471	11,719	9,247	71,710	116,863
Other equipment and tools	60,145	63,134	2,681	2,485	44,913	49,414
Apparel and apparel accessories	77,927	85,412	2,170	2,157	54,534	64,397
Footwear	13,727	13,322	198	499	13,046	12,110
Toys, games, sporting, recreation equipment	30,506	40,287	1,143	1,867	23,985	30,988
Other personal and household goods	30,842	30,046	3,946	4,098	14,429	13,297
Medicinal and pharmaceutical products	25,667	24,564	495	507	3,137	2,999
Medical, ophthalmic, orthopaedic supplies	5,313	5,419	381	335	1,619	1,630
Printed matter	30,007	32,330	951	1,555	25,341	27,406
Photographic goods	23,914	24,231	1,591	2,355	18,366	17,585
Firearms, ammunition and ordnance	66,043	34,163	8,441	6,620	53,247	25,022
Containers and closures	20,713	15,893	685	576	14,720	11,623
Prefabricated buildings and structures	31,043	24,320	487	1,134	25,973	20,395
Other end products	31,100	32,362	3,481	3,859	21,821	22,382
SPECIAL TRANSACTIONS — TRADE	31,180	30,546	456	332	23,357	25,153
Shipments valued at less than \$100 each	14,189	11,952	275	2	12,084	11,624
Other special transactions — trade	16,991	18,595	181	330	11,274	13,529
Total, domestic exports	16,401,091	17,320,805	1,465,155	1,345,805	10,579,936	11,664,642

In this table a dash indicates that either there was no trade or the amount was less than \$500.

18.7 Imports into Canada from all countries, from the United Kingdom and from the United States, by section and commodity, 1970 and 1971 (thousand dollars)

Section and commodity	All countries		United Kingdom		United States	
	1970	1971	1970	1971	1970	1971
LIVE ANIMALS	30,453	39,305	510	226	27,807	35,900
FOOD, FEED, BEVERAGES AND TOBACCO	1,085,102	1,117,523	48,967	55,718	487,878	504,423
Meat, fresh, chilled or frozen	96,914	80,774	768	467	16,471	22,902
Other meat and meat preparations	20,653	20,011	381	387	10,049	9,564
Fish and marine animals	53,348	59,674	1,372	1,272	30,078	32,842
Dairy produce, eggs and honey	30,576	30,541	1,044	655	11,033	10,427
Indian corn, shelled	28,681	13,878	—	—	28,681	13,873
Other cereals and cereal preparations	36,329	36,929	5,398	5,466	25,598	24,655
Bananas and plantains, fresh	36,288	33,203	—	—	—	33
Grapes, fresh	26,657	34,537	—	—	24,800	32,162
Oranges, mandarins and tangerines, fresh	34,367	38,110	—	—	25,825	28,380
Other fresh fruits and berries	55,532	60,196	—	2	50,298	54,539
Fruits, dried or dehydrated	15,954	14,651	30	41	7,661	7,677
Orange juice and concentrates	19,780	24,380	2	3	15,706	17,569
Other fruit juices and concentrates	13,539	12,615	356	174	9,598	8,130
Fruits and products, canned	30,478	35,100	964	1,119	16,652	17,009
Other fruits and fruit preparations	11,331	10,880	72	203	2,246	2,344
Nuts, except oil nuts	21,428	23,493	117	121	10,516	9,846
Tomatoes, fresh	23,490	26,839	—	—	11,111	16,142
Other fresh vegetables	72,061	73,953	1	2	67,854	69,707
Other vegetables and vegetable preparations	32,265	35,462	1,166	2,244	15,402	14,315
Raw sugar	85,275	97,010	—	—	—	—

18.7 Imports into Canada from all countries, from the United Kingdom and from the United States, by section and commodity, 1970 and 1971 (thousand dollars) (continued)

Section and commodity	All countries		United Kingdom		United States	
	1970	1971	1970	1971	1970	1971
FOOD, FEED, BEVERAGES AND TOBACCO (concluded)						
Refined sugar, molasses and syrups	7,010	7,336	182	113	2,334	2,856
Sugar preparations and confectionery	18,726	21,637	10,306	11,122	2,956	3,786
Cocoa and chocolate	32,157	27,593	3,450	4,264	5,581	3,438
Coffee	97,956	96,426	6	122	18,779	21,239
Tea	21,035	23,908	2,826	3,944	739	630
Other foods and materials for foods	52,331	56,034	2,271	2,233	32,993	37,094
Oil seed cake and meal	25,968	21,372	—	—	25,967	21,369
Other fodder and feed	10,293	11,299	143	191	8,833	10,136
Distilled alcoholic beverages	32,107	39,102	15,736	18,497	2,872	3,772
Other beverages	32,730	39,326	1,741	2,221	1,639	1,783
Tobacco	9,844	11,254	634	854	5,600	6,202
CRUDE MATERIALS, INEDIBLE	1,171,847	1,321,725	24,093	24,318	535,488	577,047
Fur skins, undressed	18,418	23,980	2,123	3,519	7,642	10,677
Other crude animal products	19,084	20,064	732	1,029	15,318	15,616
Soybeans	46,967	49,639	—	—	46,963	49,629
Other oil seeds, oil nuts and oil kernels	20,523	17,395	36	3	17,755	15,790
Rubber and allied gums, natural	23,349	18,465	14	20	1,354	1,086
Other crude vegetable products	31,707	31,848	274	289	25,672	25,314
Crude wood materials	30,032	33,246	1	1	29,949	33,196
Wool and fine animal hair	21,210	15,984	11,020	8,362	1,677	1,286
Cotton	41,908	50,664	82	83	31,299	46,900
Man-made fibres	24,574	27,849	5,331	3,859	16,777	20,613
Other textile fibres	4,018	4,212	11	21	590	792
Iron ores and concentrates	28,228	18,679	—	—	26,806	17,589
Scrap iron and steel	26,131	32,246	—	—	26,110	32,189
Aluminum ores, concentrates and scrap	99,590	96,777	2	—	29,299	22,781
Other metals in ores, concentrates and scrap	89,603	94,250	1,748	4,673	38,661	55,681
Coal	150,832	151,389	—	—	150,832	151,389
Crude petroleum	415,161	541,114	—	—	—	—
Other crude bituminous substances	5,397	7,364	—	—	5,360	7,318
Abrasives, natural	10,536	7,967	506	265	9,096	7,195
Phosphate rock	14,870	17,118	61	—	14,433	16,835
Other crude non-metallic minerals	38,322	47,660	1,615	1,882	30,144	32,245
Other waste and scrap materials	11,386	13,815	535	313	9,753	12,928
FABRICATED MATERIALS, INEDIBLE	2,885,423	3,140,164	193,217	220,418	1,914,943	1,980,629
Leather and leather fabricated materials	27,745	32,655	9,927	11,137	13,759	16,230
Rubber fabricated materials	52,887	58,120	1,306	1,578	48,598	52,779
Lumber	38,842	45,099	—	—	34,759	40,928
Veneer, plywood and wood building boards	34,676	47,763	243	329	14,753	19,074
Other wood fabricated materials	19,821	24,156	279	581	15,799	19,522
Wood pulp and similar pulp	9,781	14,595	12	3	9,761	14,131
Paper and paperboard	80,562	91,292	1,363	1,485	76,424	86,328
Cotton yarn and thread	13,409	16,073	2,784	2,349	5,185	6,978
Man-made fibre yarn and thread	51,623	73,732	3,472	4,026	25,293	34,574
Other yarn and thread	15,318	16,341	3,635	2,769	6,643	8,087
Cordage, twine and rope	9,622	13,137	1,003	1,064	2,311	2,656
Broad woven fabrics, wool and hair	21,555	14,474	8,669	6,468	1,590	451
Broad woven fabrics, cotton	56,985	73,049	1,146	997	27,576	35,286
Broad woven fabrics, man-made	41,012	41,680	1,564	1,743	10,551	11,542
Broad woven fabrics, mixed fibres	50,997	41,576	3,681	3,439	27,400	21,855
Other broad woven fabrics	25,882	22,022	700	554	1,760	1,045
Coated or impregnated fabrics	45,221	50,175	3,004	2,626	35,448	40,197
Other textile fabricated materials	93,910	138,242	30,397	43,075	36,203	38,654
Vegetable oils and fats, except essential oils	34,898	32,252	1,107	878	15,076	18,852
Other oils, fats, waxes, extracts, derivatives	32,472	33,072	603	1,155	29,411	29,175
Inorganic chemicals	140,322	92,985	5,631	6,669	110,671	70,763
Organic chemicals	133,543	137,377	11,811	10,724	89,486	90,654
Fertilizers and fertilizer materials	13,756	16,201	58	84	13,202	14,828
Synthetic and reclaimed rubber	42,231	42,970	1,792	2,132	38,284	37,222
Plastics materials, not shaped	112,190	124,426	2,244	2,844	98,128	110,530
Plastic film and sheet	49,944	53,023	2,650	3,234	41,309	44,499
Other plastics basic shapes and forms	37,484	41,052	798	798	33,670	36,992
Dyestuffs, except dyeing extracts	24,711	32,151	3,292	4,061	8,259	9,401
Pigments, lakes and toners	20,601	19,078	1,095	1,245	15,264	13,540
Paints and related products	17,106	18,092	752	974	15,963	16,666
Other chemical products	119,707	133,934	3,046	4,999	107,593	113,037
Fuel oil	122,225	122,972	390	—	11,477	17,964
Lubricating oils and greases	19,317	21,223	163	121	17,206	18,797
Coke of petroleum and coal	26,585	33,270	—	—	23,113	24,611
Other petroleum and coal products	37,608	36,001	1,062	2,636	15,331	13,645
Bars and rods, steel	46,955	56,140	2,737	3,931	19,138	16,590
Plate, sheet and strip, steel	128,875	176,698	5,619	8,593	79,065	76,958
Structural shapes and sheet piling	48,407	45,733	8,693	10,377	22,570	16,755
Pipes and tubes, iron and steel	65,736	72,603	5,223	4,371	34,713	32,394
Wire and wire rope, iron and steel	25,096	26,738	8,153	8,252	4,945	5,191
Other iron and steel and alloys	125,845	118,544	4,448	4,259	112,013	94,520
Aluminum, including alloys	78,817	89,888	2,326	2,884	70,905	79,464
Copper and alloys	40,940	49,846	3,851	5,351	32,593	34,578
Nickel and alloys	44,091	51,658	3,062	2,195	10,073	11,135
Precious metals, including alloys	15,613	10,273	4,335	4,609	10,751	5,214
Tin, including alloys	20,291	18,485	266	390	3,960	2,961
Other non-ferrous metals and alloys	22,301	24,895	1,022	797	15,145	16,218
Bolts, nuts and screws	60,300	59,222	1,051	1,019	52,536	52,704
Other basic hardware	91,232	106,580	3,265	3,134	79,337	94,523
Chain	14,033	13,511	2,131	2,412	7,524	6,530

18.7 Imports into Canada from all countries, from the United Kingdom and from the United States, by section and commodity, 1970 and 1971 (thousand dollars) (continued)

Section and commodity	All countries		United Kingdom		United States	
	1970	1971	1970	1971	1970	1971
FABRICATED MATERIALS, INEDIBLE (concluded)						
Valves	44,086	52,084	5,368	4,103	32,512	39,958
Pipe fittings	33,495	37,101	3,080	2,926	24,695	26,946
Other metal fabricated basic products	65,227	72,915	7,170	10,010	51,489	55,974
Clay bricks, clay tiles and refractories	44,411	42,906	2,635	2,811	33,013	29,391
Sheet and plate glass	20,992	22,335	759	540	10,546	11,987
Other glass basic products	31,362	40,238	2,004	2,158	25,554	32,088
Abrasive basic products	19,030	18,652	348	327	16,492	15,849
Natural and synthetic gem stones	16,803	18,774	1,551	836	2,451	3,195
Other non-metallic mineral basic products	31,948	36,131	2,590	2,487	24,881	28,210
Electricity	12,369	10,589	—	—	12,369	10,589
Other fabricated materials, inedible	62,619	63,364	4,494	4,866	48,414	48,492
END PRODUCTS, INEDIBLE	8,617,728	9,820,719	460,343	525,928	6,831,744	7,723,416
Engines and turbines, diesel, general purpose	25,370	33,143	7,577	7,605	15,656	22,975
Engines and turbines, general purpose, n.e.s.	43,707	52,747	8,900	8,839	30,507	38,845
Electric generators and motors	62,575	84,734	11,700	16,771	41,760	56,769
Bearings	66,292	64,761	4,948	3,332	46,446	47,416
Other mechanical power transmission equipment	49,284	52,490	4,441	5,415	43,433	45,272
Compressors, blowers and vacuum pumps	48,824	50,100	5,617	5,446	38,576	40,663
Pumps, except oil well pumps	31,315	33,410	1,985	2,727	27,179	28,164
Packaging machinery	32,153	32,940	1,683	1,793	27,441	28,097
Other general purpose industrial machinery	78,054	81,044	6,091	6,147	67,200	69,376
Conveyors and conveying systems	14,722	14,093	1,981	2,405	10,595	9,213
Elevators and escalators	7,870	7,575	1,253	1,085	6,446	6,295
Industrial trucks, tractors, trailers, stackers	37,847	36,614	4,621	5,215	31,929	29,174
Hoisting machinery	42,119	49,594	2,705	4,992	33,754	39,072
Other materials handling equipment	29,306	30,696	1,324	511	27,493	29,230
Drilling machinery and drill bits	81,745	69,288	926	806	76,596	63,821
Power shovels	39,598	55,320	409	1,333	35,678	46,778
Bulldozing and similar equipment	9,492	11,976	239	354	9,074	11,283
Front end loaders	49,535	63,686	680	485	48,285	62,164
Other excavating machinery	22,599	28,455	193	197	21,649	27,723
Mining, oil and gas machinery	65,411	65,172	11,764	7,402	47,753	54,562
Construction and maintenance machinery	45,429	56,423	1,462	1,665	40,599	51,077
Machine tools, metalworking	127,888	75,363	11,095	6,594	97,081	53,232
Welding apparatus and equipment	17,468	17,374	451	791	16,581	15,650
Rolling-mill machinery	21,713	26,454	4,166	13,156	10,586	10,269
Other metalworking machinery	69,582	57,580	7,492	6,045	53,324	41,719
Pulp and paper industries machinery	62,661	51,459	4,013	13,603	31,437	24,858
Printing presses	30,218	35,381	3,167	8,305	20,855	22,857
Other printing machinery and equipment	31,141	28,935	1,240	1,814	27,516	25,170
Spinning, weaving and knitting machinery	34,662	37,967	3,925	6,419	16,743	15,882
Other textile industries machinery	31,995	31,372	1,655	2,149	22,939	21,823
Food, beverages and tobacco industries machinery	34,859	35,305	2,572	3,088	25,426	24,968
Plastics and chemical industry machinery	42,163	35,487	818	1,440	34,107	28,370
Other special industry machinery	86,540	75,452	4,390	3,949	66,441	53,066
Soil preparation, seeding and fertilizing machinery	20,507	18,789	401	353	18,617	17,375
Combine reaper-threshers	20,431	22,501	1,015	128	18,420	20,573
Other haying and harvesting machinery	30,000	34,698	206	182	28,528	33,759
Other agricultural machinery and equipment	49,596	44,916	1,651	882	45,990	41,706
Wheel tractors, new	64,719	117,582	10,198	14,896	45,576	86,630
Track-laying tractors and used tractors	41,527	58,110	243	139	39,227	53,267
Tractor engines and tractor parts	82,348	88,351	3,723	3,876	74,364	78,495
Railway and street railway rolling-stock	32,704	44,899	2,036	2,804	29,972	41,169
Convertible automobiles, soft top, new	28,126	29,922	8,108	5,794	15,049	20,170
Sedans, new	793,077	1,165,458	26,120	40,194	611,778	870,987
Other passenger automobiles and chassis	68,190	110,308	2,285	3,710	45,009	71,859
Trucks, truck tractors and chassis	233,152	307,594	761	415	219,060	285,623
Other motor vehicles	101,683	147,961	5,089	5,355	78,501	113,199
Motor vehicle engines	270,006	303,397	4,571	11,994	212,113	258,041
Motor vehicle engine parts	104,252	155,068	1,939	2,677	95,641	146,840
Motor vehicle parts, except engines	1,653,049	1,880,352	11,506	14,531	1,621,072	1,839,167
Marine engines and parts	40,507	39,860	1,709	2,598	36,248	34,937
Ships, boats and parts, except engines	21,707	27,500	1,955	2,445	14,021	17,432
Aircraft, complete with engines	205,883	132,563	5,859	1,980	197,275	129,848
Aircraft engines and parts	75,717	65,527	13,809	9,112	60,014	56,072
Aircraft parts, except engines	102,830	90,860	3,071	2,003	93,608	87,814
Other transportation equipment	59,622	87,774	6,687	7,825	29,370	43,589
Telephone and telegraph equipment	43,046	41,389	2,774	3,309	33,131	30,101
Television, radio sets and phonographs	90,485	124,039	418	400	35,341	54,537
Electronic tubes and semi-conductors	58,740	60,275	2,675	2,849	49,676	51,248
Other telecommunication and related equipment	186,301	226,118	10,855	12,231	122,412	153,481
Air conditioning and refrigeration equipment	87,386	94,547	2,888	2,287	74,233	81,221
Electric lighting fixtures and portable lamps	47,656	52,663	1,080	963	38,561	43,150
Switchgear and protective equipment	25,001	33,574	3,208	4,152	14,048	16,275
Industrial control equipment	33,184	34,800	2,225	2,769	28,547	30,412
Other electric lighting distribution equipment	63,518	81,316	9,613	10,095	43,571	78,207
Auxiliary electric equipment for engines	71,364	83,704	2,775	2,608	63,729	78,189
Electrical property measuring instruments	35,023	35,946	3,190	3,661	28,847	29,519
Miscellaneous measuring, controlling instruments	37,501	58,792	2,725	2,660	32,042	52,370
Medical and related equipment	58,032	41,020	1,067	1,417	33,073	35,720
Navigation equipment	18,283	13,359	699	913	17,314	11,815
Other measuring, laboratory equipment, etc.	159,366	148,001	5,578	6,120	130,309	118,655
Safety and sanitation equipment	31,867	36,284	1,305	1,129	29,628	34,211
Service industry equipment	35,005	37,286	784	1,083	32,333	34,483
Furniture and fixtures	39,605	43,731	1,430	1,715	26,144	28,321
Hand tools and cutlery	71,461	75,824	7,364	7,327	50,789	53,611

18.7 Imports into Canada from all countries, from the United Kingdom and from the United States, by section and commodity, 1970 and 1971 (thousand dollars) (concluded)

Section and commodity	All countries		United Kingdom		United States	
	1970	1971	1970	1971	1970	1971
END PRODUCTS, INEDIBLE (concluded)						
Electronic computers	176,290	184,055	6,534	4,476	163,874	160,395
Other office machines and equipment	137,711	183,659	8,378	10,477	96,007	137,104
Miscellaneous equipment and tools	162,458	189,167	8,525	7,572	137,128	160,305
Outerwear, except knitted	76,940	83,454	3,182	3,345	15,514	18,567
Outerwear, knitted	53,276	72,396	5,624	6,047	3,066	4,277
Other apparel and apparel accessories	49,582	53,020	6,068	5,101	10,202	11,881
Footwear	74,084	85,359	8,098	7,748	3,180	3,528
Watches, clocks, jewellery and silverware	39,089	41,160	5,957	6,745	11,896	11,014
Sporting and recreation equipment	41,393	47,871	3,108	3,367	18,261	21,376
Games, toys and children's vehicles	36,675	39,618	3,295	3,548	14,475	16,263
House furnishings	53,019	57,562	8,212	9,906	20,543	23,115
Kitchen utensils, cutlery and tableware	63,420	73,510	18,149	19,921	20,877	23,295
Other personal and household goods	70,624	74,737	6,344	7,481	35,938	35,335
Medicinal and pharmaceutical products	79,794	80,530	12,203	10,315	46,512	47,233
Medical, ophthalmic, orthopaedic supplies	60,482	68,775	1,856	2,370	47,614	52,249
Newspapers, magazines and periodicals	65,809	71,093	1,198	2,848	58,580	62,849
Books and pamphlets	126,078	132,319	11,105	10,733	99,737	104,109
Other printed matter	52,778	54,952	3,068	3,044	45,104	46,796
Stationers' and office supplies	38,969	40,536	3,833	4,366	28,604	29,327
Unexposed photographic film and plates	52,323	61,826	18,661	24,375	25,288	27,501
Other photographic goods	113,591	125,791	1,866	3,155	90,993	97,238
Containers and closures	71,049	74,191	2,612	2,498	64,553	66,350
Other end products, inedible	155,696	146,095	11,888	13,031	89,532	83,396
SPECIAL TRANSACTIONS — TRADE						
Shipments of less than \$200 each	70,133	70,313	8,446	7,824	43,087	42,829
Other special transactions — trade	91,216	96,840	2,687	2,825	76,100	76,987
Total, imports	13,951,903	15,606,589	738,262	837,258	9,917,045	10,941,233

In this table a dash indicates that either there was no trade or the amount was less than \$500.

18.8 Domestic exports by section and by stage of fabrication, selected years 1956-71 (thousand dollars)

Year	Section and stage of fabrication					Sect. III Crude materials, inedible	Sect. IV Fabricated materials, inedible	Sect. V End products, inedible
	Sect. I Live animals	Sect. II Food, feed, beverages and tobacco			Total			
		Crude materials	Fabricated materials	End products				
All countries								
1956	13,401	750,432	152,507	180,528	1,083,467	872,967	2,441,679	325,609
1961	66,901	865,451	138,688	193,664	1,197,803	1,195,442	2,777,345	505,591
1966	78,002	1,362,808	204,236	321,247	1,888,293	1,947,625	4,012,068	2,119,324
1967	42,313	1,068,703	187,059	346,533	1,602,295	2,108,298	4,229,365	3,115,933
1968	59,365	1,002,886	171,383	379,488	1,553,757	2,467,578	4,855,098	4,296,464
1969	54,404	803,233	180,459	426,115	1,409,807	2,457,909	5,162,695	5,342,402
1970	68,168	1,162,403	215,863	422,021	1,800,286	3,068,220	5,866,452	5,566,784
1971	67,341	1,373,118	235,171	427,054	2,035,341	3,232,028	5,784,812	6,170,736
United Kingdom								
1956	22	232,322	46,878	13,734	292,934	130,636	380,952	6,558
1961	184	179,656	39,273	19,312	238,240	204,539	440,073	26,069
1966	37	195,683	53,446	37,543	286,672	231,552	547,701	56,058
1967	56	199,682	45,514	48,114	293,310	246,431	570,604	58,309
1968	379	180,856	39,102	51,041	270,999	276,006	591,268	70,512
1969	54	177,172	38,410	43,033	258,614	231,487	531,073	69,512
1970	41	187,072	40,211	30,457	257,739	300,308	799,713	106,899
1971	218	196,464	39,763	38,613	274,840	306,906	639,004	124,505
United States								
1956	11,020	154,550	31,843	125,437	311,829	556,047	1,755,733	151,984
1961	61,060	130,025	33,794	134,302	298,121	694,914	1,760,533	283,707
1966	68,951	154,520	51,680	223,166	429,366	1,122,691	2,760,777	1,625,975
1967	34,503	147,824	50,456	232,213	430,493	1,185,628	2,822,357	2,597,949
1968	50,674	170,996	49,793	267,949	488,738	1,372,719	3,350,775	3,647,781
1969	45,825	182,534	53,318	320,238	556,090	1,370,673	3,573,320	4,664,422
1970	55,198	215,160	64,391	325,237	604,788	1,625,552	3,603,442	4,667,599
1971	55,903	204,698	72,296	323,416	600,410	1,734,236	3,911,713	5,337,226
	Sect. VI Special transactions — trade				Total domestic exports	Recapitulation		
	Crude materials	Fabricated materials	End products	Total		Crude materials	Fabricated materials	End products
All countries								
1956	32	3,742	4,730	8,504	4,745,626	1,636,832	2,597,928	510,867
1961	4,337	403	7,164	11,903	5,754,986	2,132,131	2,916,436	706,419
1966	10,068	735	14,514	25,316	10,070,627	3,398,503	4,217,039	2,455,085
1967	7,618	843	14,009	22,470	11,120,674	3,226,931	4,417,268	3,476,475
1968	9,745	1,449	26,478	37,672	13,269,935	3,539,574	5,027,930	4,702,431
1969	9,490	1,708	24,008	35,205	14,462,424	3,325,036	5,344,862	5,792,525
1970	8,796	1,128	21,256	31,180	16,401,091	4,307,587	6,083,443	6,010,061
1971	11,953	99	18,496	30,546	17,320,805	4,684,440	6,020,082	6,616,286

18.8 Domestic exports by section and by stage of fabrication, selected years 1956-71 (thousand dollars) (concluded)

Year	Section and stage of fabrication				Total domestic exports	Recapitulation		
	Sect. VI Special transactions — trade					Crude materials	Fabricated materials	End products
	Crude materials	Fabricated materials	End products	Total				
United Kingdom								
1956	—	11	—	11	811,113	362,980	427,841	20,292
1961	97	7	135	240	909,344	384,476	479,353	45,516
1966	281	18	255	554	1,122,574	427,553	601,165	93,856
1967	203	13	126	342	1,169,053	446,372	616,131	106,549
1968	203	13	188	404	1,209,567	457,444	630,383	121,741
1969	175	59	258	491	1,091,236	408,888	569,542	112,803
1970	171	18	267	456	1,465,155	487,592	839,942	137,623
1971	1	12	317	332	1,345,805	503,589	678,779	163,435
United States								
1956	10	649	999	1,657	2,788,270	721,627	1,788,225	278,420
1961	3,519	97	5,225	8,841	3,107,176	889,518	1,794,424	423,234
1966	7,966	594	11,402	19,962	6,027,722	1,354,128	2,813,051	1,860,543
1967	6,106	428	11,025	17,559	7,088,490	1,374,061	2,873,241	2,841,187
1968	8,394	571	21,849	30,814	8,941,501	1,602,783	3,401,139	3,937,579
1969	8,213	645	18,554	27,413	10,237,743	1,607,245	3,627,283	5,003,214
1970	7,493	509	15,358	23,357	10,579,937	1,903,403	3,668,342	5,008,194
1971	11,624	78	13,452	25,153	11,664,642	2,006,461	3,984,087	5,674,094

18.9 Imports by section and by stage of fabrication, selected years 1956-71 (thousand dollars)

Year	Section and stage of fabrication					Sect. III Crude materials, inedible	Sect. IV Fabricated materials, inedible	Sect. V End products, inedible
	Sect. I Live animals	Sect. II Food, feed, beverages and tobacco			Total			
		Crude materials	Fabricated materials	End products				
All countries								
1956	5,375	279,318	114,798	129,540	523,656	825,787	1,528,130	2,590,053
1961	7,025	327,268	129,473	164,785	621,526	763,536	1,395,779	2,879,561
1966	12,910	422,087	144,959	224,695	791,741	1,023,212	2,233,137	5,483,468
1967	21,895	456,910	156,373	248,313	861,596	1,062,268	2,310,208	6,549,967
1968	15,554	488,965	159,778	253,889	902,633	1,126,744	2,434,593	7,619,559
1969	18,715	552,273	189,348	302,329	1,043,951	1,085,460	2,905,330	8,884,929
1970	30,453	567,686	205,676	311,739	1,085,102	1,171,847	2,885,423	8,617,728
1971	39,305	557,957	207,027	352,538	1,117,523	1,321,725	3,140,164	9,820,719
United Kingdom								
1956	360	2,548	5,260	17,871	25,679	28,750	196,514	219,421
1961	142	4,648	8,117	20,975	33,740	28,139	160,503	388,233
1966	126	8,215	5,493	30,479	44,187	31,622	175,186	380,135
1967	133	3,910	5,358	33,604	42,872	29,979	176,538	414,149
1968	159	5,454	4,743	35,718	45,915	28,296	183,848	421,821
1969	245	6,359	4,619	38,335	49,313	27,755	198,826	501,608
1970	510	4,669	5,636	38,662	48,967	24,093	193,217	460,343
1971	226	5,606	6,258	43,855	55,718	24,318	220,418	525,928
United States								
1956	4,772	144,140	37,136	70,234	251,510	401,715	1,096,282	2,214,930
1961	6,493	187,383	45,536	87,214	320,133	335,902	943,086	2,178,165
1966	12,241	242,739	64,059	95,301	402,097	506,439	1,481,763	4,451,648
1967	20,765	264,846	64,497	99,394	428,735	512,292	1,494,988	5,323,634
1968	14,533	281,761	68,746	103,693	454,200	535,828	1,580,379	6,244,226
1969	17,274	313,425	74,755	120,117	508,296	451,668	1,911,504	7,206,826
1970	27,807	291,223	73,153	123,502	487,878	535,488	1,914,943	6,831,744
1971	35,900	301,265	67,369	135,790	504,423	577,047	1,980,629	7,723,416
	Sect. VI Special transactions — trade				Total imports	Recapitulation		
	Crude materials	Fabricated materials	End products	Total		Crude materials	Fabricated materials	End products
All countries								
1956	7,533	26,668	39,750	73,951	5,546,952	1,118,013	1,669,596	2,759,343
1961	11,430	31,490	58,231	101,152	5,768,578	1,109,259	1,556,742	3,102,577
1966	40,836	70,543	210,652	322,031	9,866,439	1,499,045	2,448,639	5,918,755
1967	34,909	55,457	178,900	269,266	11,075,199	1,575,982	2,522,038	6,977,180
1968	34,342	49,606	174,963	258,911	12,357,994	1,665,605	2,643,977	8,048,411
1969	26,328	32,888	132,776	191,991	14,130,375	1,682,776	3,127,566	9,320,034
1970	22,623	25,276	113,450	161,349	13,951,903	1,792,609	3,116,375	9,042,917
1971	—	2,519	164,634	167,154	15,606,589	1,918,987	3,349,710	10,337,891
United Kingdom								
1956	203	4,359	1,085	5,647	476,371	31,861	206,133	238,377
1961	489	4,506	2,470	7,464	618,221	33,418	173,126	411,678
1966	1,714	2,964	8,809	13,486	644,741	41,677	183,643	419,423
1967	1,210	1,980	6,188	9,378	673,050	35,232	183,876	453,941
1968	2,305	2,245	11,505	16,055	696,094	36,214	190,836	469,044
1969	1,782	2,410	9,034	13,226	790,973	36,141	205,855	548,977
1970	1,407	2,479	7,246	11,133	738,262	30,679	201,332	506,251
1971	—	228	10,421	10,649	837,258	30,150	226,904	580,204

18.9 Imports by section and by stage of fabrication, selected years 1956-71 (thousand dollars) (concluded)

Year	Section and stage of fabrication				Total imports	Recapitulation		
Year	Sect. VI Special transactions — trade					Crude materials	Fabricated materials	End products
	Crude materials	Fabricated materials	End products	Total				
United States								
1956	7,133	17,444	37,608	62,185	4,031,395	557,760	1,150,862	2,322,772
1961	10,178	18,048	51,963	80,189	3,863,968	539,956	1,006,670	2,317,342
1966	35,784	60,966	184,674	281,424	7,135,611	797,203	1,606,788	4,731,623
1967	30,688	47,832	157,407	235,927	8,016,341	828,591	1,607,317	5,580,435
1968	29,072	41,766	148,369	219,206	9,048,372	861,194	1,690,891	6,496,288
1969	20,591	23,370	103,713	147,674	10,243,242	802,958	2,009,629	7,430,656
1970	17,283	15,706	86,196	119,186	9,917,045	871,801	2,003,802	7,041,442
1971	—	298	119,519	119,817	10,941,233	914,212	2,048,296	7,978,725

18.10 Percentage growth rates of domestic exports and imports in current dollars

Item and period	All countries				United States Total
	Crude materials	Fabricated materials	End products	Total	
Domestic exports					
1956-61	5.5	2.4	6.7	4.0	2.3
1961-66	9.8	7.6	28.3	11.9	14.2
1966-71	6.7	7.4	22.0	11.5	14.1
1956-71	7.3	5.8	17.1	9.0	10.0
Imports					
1956-61	-0.2	-1.8	2.4	0.8	-1.1
1961-66	6.2	9.5	13.8	11.4	13.1
1966-71	5.1	6.5	11.8	9.6	9.0
1956-71	3.7	4.8	9.2	7.2	6.9

18.11 Number and expenditure of United States travellers in Canada and Canadian travellers in United States, 1966-71

Year	US travellers in Canada No.	US expenditure in Canada \$'000	Canadians travelling in US No.	Canadian expenditure in US ¹ \$'000	Excess of US travellers in Canada No.	Balance of payments with US \$'000
1966	35,325,000	729,932	34,679,900	628,150	+645,100	+101,782
1967	39,975,600	1,164,223	32,499,900	626,538	+7,475,700	+537,685
1968	34,775,800	891,234	33,948,500	710,223	+827,300	+181,011
1969	35,765,600	961,314	35,441,700	892,562	+323,900	+68,752
1970	37,153,000	1,081,900	35,656,000	935,900	+1,497,000	+146,000
1971	38,449,000	1,129,000	34,259,000	944,000	+4,190,000	+185,000

¹ Includes Hawaii and transportation fares paid to United States carriers by Canadians travelling overseas via United States.

18.12 Number and expenditure of United States travellers in Canada and Canadian travellers in United States, by means of travel and length of stay, 1970 and 1971

Year and item	US travellers in Canada ¹ '000	US expenditure in Canada \$'000	Canadians travelling in US ¹ '000	Canadian expenditure in US ² \$'000	Excess of US travellers in Canada '000	Excess of US expenditure in Canada \$'000
1970						
Short-term	23,505	129,300	25,921	54,800	-2,416	+74,500
Automobile	20,804	104,500	22,891	45,300	-2,087	+59,200
Aircraft	120	3,000	52	2,400	+68	+600
Bus	335	2,400	79	600	+256	+1,800
Rail	14	—	—	—	+14	—
Boat	186	700	22	—	+164	+700
Other	2,046	18,700	2,877	6,500	-831	+12,200
Long-term	13,648	952,600	9,735	833,700	+3,913	+118,900
Automobile	11,214	627,800	7,804	513,600	+3,410	+114,200
Aircraft	1,166	181,200	1,143	241,300	+23	-60,100
Bus	730	105,300	599	65,600	+131	+39,700
Rail	126	22,500	86	11,200	+40	+11,300
Boat	412	15,800	103	2,000	+309	+13,800
Total, 1970	37,153	1,081,900	35,656	888,500	+1,497	+193,400

18.12 Number and expenditure of United States travellers in Canada and Canadian travellers in United States, by means of travel and length of stay, 1970 and 1971 (concluded)

Year and item	US travellers in Canada ¹ '000	US expenditure in Canada \$'000	Canadians travelling in US ¹ '000	Canadian expenditure in US ² \$'000	Excess of US travellers in Canada '000	Excess of US expenditure in Canada \$'000
1971						
Short-term	24,112	132,100	24,331	61,000	-219	+71,100
Automobile	21,298	106,300	21,387	49,300	-89	+57,000
Aircraft	77	2,100	48	3,300	+29	-1,200
Bus	420	2,400	69	300	+351	+2,100
Rail	—	—	—	—	—	—
Boat	237	1,400	45	1,100	+192	+300
Other	2,080	19,900	2,782	7,000	-702	+12,900
Long-term	14,337	996,800	9,928	838,700	+4,409	+158,100
Automobile	11,943	681,000	7,937	501,200	+4,006	+179,800
Aircraft	1,203	213,600	1,214	265,400	-11	-51,800
Bus	792	81,600	660	66,400	+132	+15,200
Rail	64	10,800	27	3,600	+37	+7,200
Boat	335	9,800	90	2,100	+245	+7,700
Total, 1971	38,449	1,128,900	34,259	899,700	+4,190	+229,200

¹ Includes substantial amounts of in-transit, commuting and local traffic.

² Excludes Hawaii and transportation fares paid to United States carriers by Canadians travelling overseas via United States.

18.13 Highway traffic at Canadian border points, 1970 and 1971

Year and province or territory	Foreign vehicles inward			Canadian vehicles returning		
	Same day	One or more nights in Canada	Commercial vehicles	Same day	One or more nights in US	Commercial vehicles
1970						
Atlantic Provinces	1,357,021	305,730	62,749	2,009,200	190,900	141,100
Quebec	881,995	727,117	123,652	1,506,500	964,300	229,400
Ontario	5,592,990	2,161,570	324,730	4,106,100	872,500	531,400
Manitoba	158,509	134,397	19,873	191,500	133,900	26,000
Saskatchewan	53,852	39,576	10,617	84,200	41,400	28,200
Alberta	50,322	86,150	15,069	68,700	52,500	9,100
British Columbia	557,280	547,856	70,074	1,452,500	421,900	45,100
Yukon Territory	4,805	26,960	3,721	1,100	2,300	1,100
Total, 1970	8,656,774	4,029,356	630,485	9,419,800	2,679,700	1,011,400
1971						
Atlantic Provinces	1,336,938	323,584	51,197	1,988,100	202,200	135,400
Quebec	866,733	739,713	144,995	1,392,700	979,300	233,400
Ontario	5,490,294	2,358,088	380,425	4,011,400	933,400	546,100
Manitoba	175,457	131,500	21,223	185,200	125,400	23,700
Saskatchewan	53,786	43,465	13,746	80,400	43,500	33,300
Alberta	55,341	91,963	17,491	72,300	56,300	9,700
British Columbia	597,069	569,496	93,602	1,287,100	392,400	52,100
Yukon Territory	5,222	25,770	3,383	1,200	2,600	700
Total, 1971	8,580,840	4,283,579	726,062	9,018,400	2,735,100	1,034,400

18.14 Travel receipts and payments between Canada and overseas areas¹, 1970 and 1971 (million dollars)

Overseas area	Receipts		Payments	
	1970	1971	1970	1971
United Kingdom	44	42	156	180
Other sterling areas	23	24	66	70
Other OECD in Europe	53	54	207	226
All other countries	32	34	95	74
Total	152	154	524	550

¹ Excludes Hawaii.

Sources

18.1 - 18.10 External Trade Division, General Statistics Branch, Statistics Canada.

18.11 - 18.14 Financial Flows Division and Multinational Enterprise Division, System of National Accounts (Current) Branch, Statistics Canada.

Chapter 19

Banking, finance and insurance

19.1 Banking

19.1.1 The Bank of Canada

Canada's central bank, the Bank of Canada, began operations on March 11, 1935, under the terms of the Bank of Canada Act, 1934, which charged it with the responsibility for regulating "credit and currency in the best interests of the economic life of the nation", and conferred on it specific powers for discharging this responsibility. Through the exercise of these powers, the Bank broadly determines the combined total of the most common forms of Canadian money held by the community – chartered bank deposits and currency. Revisions to the Bank of Canada Act, 1934, were made in 1936, 1938, 1954 and 1967, and are included in RSC 1970, c.B-2.

The provisions of the Bank of Canada Act enable the central bank to determine the total amount of cash reserves available to the chartered banks as a group and in that way to control the rate of expansion of the total assets and deposit liabilities of the banking system as a whole. The Bank Act, which regulates the operation of the chartered banks, requires that each chartered bank maintain a stipulated minimum average amount of cash reserves, calculated as a percentage of its Canadian dollar deposit liabilities, in the form of deposits at the Bank of Canada and holdings of Bank of Canada notes. The minimum cash reserve requirement, which came into effect under the legislation beginning February 1, 1968, is 12% of demand deposits and 4% of other deposits. The ability of the chartered banks as a group to expand their total assets and deposit liabilities is therefore limited by the total amount of cash reserves available. An increase in cash reserves will encourage the banks as a group to expand their total assets (which consist chiefly of loans and marketable securities) with a concomitant increase in their deposit liabilities; a decrease in cash reserves will bring about a decline in their total assets and deposit liabilities as they seek to restore their cash reserve ratios.

The chief method by which the Bank of Canada alters the level of cash reserves of the chartered banks over time, and through them the total of chartered bank deposits, is by purchases and sales of government securities. Payment by the central bank for the securities it purchases in the market adds to the cash reserves of the chartered banks as a group and puts them in a position to expand their assets and deposit liabilities. Conversely, payment to the central bank for securities it sells causes a reduction in the cash reserves of the chartered banks and requires them to reduce their holdings of assets and deposit liabilities.

The influence the Bank of Canada exerts on credit conditions (i.e., on interest cost and other terms of borrowing in financial markets) stems from its ability to limit the growth of bank credit and of the community's holdings of bank deposits and currency. The growth rate of the banking system is one of the factors exerting an important influence on the level of interest rates and other terms of access to credit prevailing in financial markets generally. Current credit conditions (and expectations about future trends in such conditions) in turn have an influence on business and household decisions to spend or to save. Many other factors have an important effect on spending decisions and the behaviour of the economy is subject to such influences as economic and financial developments abroad; the investment, price and wage policies of business firms in Canada; and the character of public policies at all levels of government with regard to expenditure and taxation. In using the powers at its disposal, the Bank attempts to bring about credit conditions appropriate to both domestic and external conditions. Its operations must be based, not on any simple mechanical formula, but rather on continuous observation and appraisal of the constantly changing prospects for the economy as reflected in the complex pattern of economic and financial developments.

In a technical sense, the powers that the central bank possesses allow it to exert a strong influence over economic activity but, in practice, the range through which credit conditions can be permitted to vary is necessarily limited. Changes in credit conditions in Canada affect the position of some groups in the economy much more than that of others, and this uneven impact is bound to inhibit the central bank's operations. Furthermore, interest rates in Canada cannot change greatly in relation to those abroad without producing large capital movements

which might complicate Canada's international payments position. These considerations suggest that monetary policy must be used in appropriate combination with other public economic policies in order to help achieve national economic goals.

Although the Bank of Canada has the power to determine the rate of growth of the combined total of currency and chartered bank deposits, it has no means of determining how much of this total is held in the form of currency and how much in the form of chartered bank deposits. This depends entirely on the preferences of the public, since bank deposits can be converted freely into notes and coin and back again.

Although the cash reserve system in Canada — which is similar to that in a number of other countries — enables the central bank to determine within broad limits the total amount of chartered bank assets and deposit liabilities, the Bank of Canada leaves the allocation of bank and other forms of credit to the private sector of the economy. Each chartered bank is free to attempt to gain as large a share as possible of the total cash reserves available by competing for deposits and to decide what proportion of its funds to invest in particular kinds of securities and in loans to particular types of borrowers. The influence of the central bank — based in essence on its power to expand or contract chartered bank cash reserves through its market purchases or sales of securities — is both indirect and impersonal and is brought to bear on financial conditions generally through the chartered banks and the numerous interconnected channels of the capital market.

The Bank may buy or sell securities issued or guaranteed by Canada or any province, short-term securities issued by Britain, treasury bills or other obligations of the United States and certain types of short-term commercial paper. The Industrial Development Bank Act authorizes the Bank to purchase securities issued by that institution. The Bank may buy or sell gold, silver, nickel and bronze coin, or any other coin, and gold and silver bullion as well as foreign exchange and may accept non-interest-bearing deposits from the Government of Canada, the government of any province, any chartered bank and any bank regulated by the Quebec Savings Bank Act. The Bank may open accounts in other central banks; accept deposits from other central banks, the International Monetary Fund, the International Bank for Reconstruction and Development, and any other official international financial organization; and pay interest on such deposits. The Bank does not accept deposits from individuals nor does it compete with the chartered banks in the commercial banking field. It acts as the fiscal agent for the Government of Canada in the payment of interest and principal and generally in respect of the management of the public debt of Canada. The sole right to issue paper money for circulation in Canada is vested in the Bank.

The Bank of Canada may require the chartered banks to maintain, in addition to the legal minimum cash reserve requirement mentioned above, a secondary reserve which the Bank may vary within certain limits. The secondary reserve, which consists of cash reserves in excess of the minimum requirement, treasury bills and day-to-day loans to investment dealers, cannot be more than 6% of total deposits when first introduced nor can it exceed 12%; effective January 1972, the required level was 8%. In the event the Bank wishes to introduce or increase the secondary reserve requirement, one month's notice to the chartered banks is required; the amount of any increase in the requirement cannot exceed 1% per month. In the case of a lowering of the secondary reserve requirement, however, the percentage change in any one month is not restricted.

The Bank of Canada may make loans or advances for periods not exceeding six months to chartered banks, or to banks to which the Quebec Savings Bank Act applies, on the pledge of certain classes of securities. Loans or advances may be made under certain conditions and for limited periods to the Government of Canada or of any province. The Bank of Canada is required to make public at all times the minimum rate at which it is prepared to make loans or advances; this rate is known as the bank rate. From November 1, 1956 until June 24, 1962, the bank rate was established weekly at a fixed margin of $\frac{1}{4}$ of 1% above the latest weekly average tender rate for 91-day treasury bills. Bank rates since June 24, 1962, have been fixed from time to time and are given in Table 19.1. The rate as at December 31, 1972 was 4.75% per annum.

From June 24, 1962 to November 12, 1970, the money-market rate — the rate at which the Bank of Canada is prepared to enter into purchase and resale agreements with money-market dealers — was either $\frac{1}{4}$ of 1% above the average rate on 91-day treasury bills at the preceding weekly tender or the bank rate, whichever was lower; since November 12, 1970, the minimum rate is the bank rate less $\frac{3}{4}$ of 1%.

Assets and liabilities of the Bank of Canada at December 31, 1970-72 are shown in Table 19.2. The Bank is not required to maintain gold or foreign exchange reserves against its liabilities.

Prior to the 1967 amendment of the Bank of Canada Act, there existed some uncertainty about the exact relationship between the central bank and the government. The changes in the Bank of Canada Act in 1967 were designed to clarify this matter. They provide for regular consultation between the Governor of the Bank and the Minister of Finance as well as for a formal procedure whereby, in the event of a disagreement between the government and the Bank which cannot be resolved, the government may, after further consultation has taken place, issue a directive to the Bank as to the monetary policy that it is to follow. Any such directive must be in writing, it must be in specific terms, and it must be applicable for a specified period. It must be published immediately in the *Canada Gazette* and tabled in Parliament. The amendment makes it clear that the government must take the ultimate responsibility for monetary policy and it provides a mechanism for that purpose but the central bank is in no way relieved of its responsibility for monetary policy and its execution.

The Bank is under the management of a Board of Directors composed of a Governor, a Deputy Governor and twelve directors. The Governor and Deputy Governor are appointed for terms of seven years each by the directors, with the approval of the Governor in Council. The directors are appointed by the Minister of Finance, with the approval of the Governor in Council, for terms of three years each. The Deputy Minister of Finance is a member of the Board but does not have the right to vote. There is an Executive Committee of the Board composed of the Governor, the Deputy Governor, two directors and the Deputy Minister of Finance (who is without a vote); this Committee has the same powers as the Board except that its decisions must be submitted to the Board at its next meeting. In addition to the Deputy Governor who is a member of the Board, there may be one or more Deputy Governors appointed by the Board of Directors to perform such duties as are assigned by the Board.

The head office of the Bank is in Ottawa. It has agencies in Halifax, Saint John, Montreal, Ottawa, Toronto, Winnipeg, Regina, Calgary and Vancouver and is represented in St. John's and Charlottetown.

The Industrial Development Bank, a federal Crown corporation and a subsidiary of the Bank of Canada, was established by Act of Parliament in 1944 to provide capital assistance to develop new businesses and to finance the expansion programs of existing small and medium-size businesses which are unable to obtain financing elsewhere in Canada under reasonable conditions and terms.

The President of the Industrial Development Bank (IDB) is the Governor of the Bank of Canada and the directors are the directors of the Bank of Canada and the Deputy Minister of Industry, Trade and Commerce. The authorized capital of the IDB is \$75 million and it may also raise funds by the issue of bonds and debentures provided that its total direct liabilities and contingent liabilities in the form of guarantees and underwriting agreements do not exceed ten times the aggregate of its paid-up capital and reserve fund. The total amount of commitments of the IDB in the form of loans, guarantees, etc., in excess of \$200,000 each, may not exceed \$200 million. Assets and liabilities of the IDB are given in Table 19.3.

The purpose of the IDB is to promote the economic welfare of Canada by ensuring the availability of credit to industrial enterprises which may reasonably be expected to prove successful, by supplementing the activities of other lenders and by providing financial assistance to industry with particular emphasis in meeting the needs of small enterprises. The IDB may, among other things, lend money, guarantee loans to other lenders and purchase shares of a corporation with a view to the resale of the shares. The IDB can lend to virtually any industry, trade or other business undertaking of any kind and meet any sort of financial need.

The IDB Act stipulates that the amount invested or to be invested in the industrial enterprise by persons other than the IDB should be such as to afford it reasonable protection. A loan proposal is then assessed on the grounds of its business viability and creditworthiness.

During the past year the IDB has launched an advisory services function to provide small businesses with various services of a non-monetary nature; they are mostly informational including education material on business management in the form of a series of booklets. Seminars on business management are being conducted by the IDB in smaller centres across Canada where this type of service is not now available.

The IDB has 46 branches across Canada located in the following cities: St. John's, Halifax, Sydney, Saint John, Moncton, Charlottetown, Rimouski, Chicoutimi, Quebec, Trois-Rivières, Sherbrooke, Montreal, Longueuil, Rouyn - Noranda, Ottawa, Kingston, Toronto, Hamilton, St. Catharines, Kitchener - Waterloo, London, Windsor, Sudbury, Sault Ste. Marie, Thunder Bay, Kenora, Winnipeg, Brandon, Regina, Saskatoon, Lethbridge, Calgary, Edmonton, Grande Prairie, Cranbrook, Kelowna, Prince George, Chilliwack, New Westminster, Vancouver, North Vancouver, Victoria and Campbell River.

19.1.2 Currency

Note circulation. The development by which bank notes became the chief circulating medium in Canada prior to 1935 is described in the *1938 Canada Year Book*, pp. 900-905. Those features of the development which then became permanent are outlined in the *1941 Canada Year Book*, pp. 809-810.

When the Bank of Canada commenced operations in 1935 it assumed liability for Dominion notes outstanding. These were replaced in public circulation and partly replaced in cash reserves by the Bank's legal tender notes in denominations of \$1, \$2, \$5, \$10, \$20, \$50 and \$100. Deposits of chartered banks at the Bank of Canada completed the replacement of the old Dominion notes of \$1,000 to \$50,000 denomination that had previously been used as cash reserves. The chartered banks were required under the Bank Act of 1934 to reduce gradually the issue of their own bank notes during the years 1935-45 to an amount not in excess of 25% of their paid-up capital on March 11, 1935. Bank of Canada notes thus replaced chartered bank notes as the issue of the latter was reduced. Further restrictions introduced by the 1944 revision of the Bank Act cancelled the right of chartered banks to issue or re-issue notes after January 1, 1945, and in January 1950 the chartered banks' liability for such of their notes issued for circulation in Canada as then remained outstanding was transferred to the Bank of Canada in return for payment of a like sum to the Bank of Canada.

Bank of Canada note liabilities for the years 1970-72 are given in Table 19.4. Note circulation in public hands as at December 31, 1972 amounted to \$4,055.7 million, compared to \$3,505.8 million in 1971 and \$3,106.2 million in 1970.

Dollar currency and bank deposits. Bank of Canada statistics concerning currency and chartered bank deposits are given in Table 19.5.

19.1.3 Coinage

Under the Currency and Exchange Act (RSC 1970, c.C-39), gold coins may be issued in the denomination of \$20 (nine tenths fine or millesimal fineness 900); subsidiary coins in denominations of \$1, 50 cents, 25 cents, ten cents (five tenths fine or millesimal fineness 500, or pure nickel); pure nickel five-cent coins; and bronze (copper, tin and zinc) one-cent coins. Provision is made for the temporary alteration of composition in the event of a shortage of prescribed metals. A tender of payment of money in coins is a legal tender in the case of gold coins issued under the authority of Section 4 of the Currency and Exchange Act for the payment of any amount; in the case of silver coins for the payment of an amount up to \$10; nickel coins for payment up to \$5; and bronze coins up to 25 cents.

Table 19.6 gives figures for the value of Canadian coins in circulation. Receipts of gold bullion at the Royal Canadian Mint and bullion and coinage issued are given in Table 19.7.

The Ottawa Mint, established as a branch of the Royal Mint under the (Imperial) Coinage Act of 1870, was opened on January 2, 1908. On December 1, 1931, it became the Royal Canadian Mint and operated as a branch of the Department of Finance. The Mint was established as a Crown (agency) corporation in 1969 to allow for a more industrial type of organization and for flexibility in producing coins of Canada and other countries; buying, selling, melting, assaying and refining gold and precious metals; and producing medals, plaques and other devices.

Financial and budgeting arrangements are similar to those of other Crown companies carrying on industrial or commercial operations. Loans are made from the Consolidated Revenue Fund for operating and capital expenses, with the total outstanding at any time limited to \$35 million. Provision is made for loans for temporary purposes and a reserve is established against losses. Operations are conducted with the aim of making a small profit.

On December 16, 1971, a decision was made by the Cabinet to locate a new plant for the production of coin for general circulation in the Winnipeg area of Manitoba. Work on the site

was begun in early October 1972 and the plant is expected to be in operation toward the end of 1974.

19.1.4 Chartered banks

Canada's commercial banking system consists of ten privately owned banks. Eight have been in operation for many years, one commenced operations in July 1968 and another received its charter in November 1972 but had not begun operations by the end of the year. At the end of December 1970, these banks operated 6,200 banking offices in Canada and 270 abroad. Canadian chartered banks engage in a very wide range of activities; they accept various types of deposits from the public including accounts payable on demand, both chequing and non-chequing, notice deposits and fixed-term deposits. The banks, in addition to holding a portfolio of securities, make loans under a wide variety of conditions for commercial, industrial, agricultural and consumer purposes. They also deal in foreign exchange, receive and pay out bank notes, provide safekeeping facilities and perform a variety of other services. For the most part, these operations are carried out in Canada by the extensive network of bank branches. The head offices of the banks confine their activities largely to general administration and policy-making functions, the management of the banks' investment portfolio and related matters. A detailed account of the branch banking system in Canada is given in the *1967 Canada Year Book*, pp. 1126-1128.

All banks operating in Canada are chartered (i.e., licensed) by Parliament under the terms of the Bank Act. The Act regulates certain internal aspects of bank operations such as the auditing of accounts, the issuing of stock, the setting aside of reserves and similar matters. In addition, the Bank Act regulates the banks' relationship with the public, the government and the Bank of Canada.

The Bank Act has been revised at approximately ten-year intervals; the most recent revision was enacted by Parliament early in 1967 and came into effect on May 1 of that year. Increased competition and flexibility in the Canadian banking system were reflected in various new Bank Act provisions. These imposed certain restrictions on corporate and other relationships between banks and other financial institutions, while removing certain existing restrictions on the banks' operations which had placed them at some competitive disadvantage in recent years compared with their principal financial competitors.

In the past, various forms of intercorporate financial relationships between chartered banks and other financial enterprises had developed in Canada. In some instances these involved investment by banks in the shares of these enterprises, and vice versa; in others the relationship involved interlocking directorships. These practices are severely restricted under the terms of the 1967 Bank Act, which limits bank ownership of any Canadian corporation to 10% of the voting shares and also provides that no more than one fifth of the directors of any company may become directors of a bank. In addition, after a two-year period a director of a trust or mortgage loan company which accepts deposits from the public may not be appointed or elected a director of a bank. In order to ensure that competition is not curtailed by agreements among the banks on interest rates to be paid on deposits or charged for loans, the 1967 Bank Act prohibits the making of such agreements (except with the consent of the Minister of Finance). At the same time the provision that was formerly in the Bank Act limiting to 6% the interest rate which chartered banks could charge on loans was abolished effective January 1, 1968. Under the 1967 Bank Act, the determination of interest rates on loans and deposits is left to market forces.

The 1967 Bank Act also granted the banks new mortgage-lending powers, permitting them to charge current rates of interest on mortgage loans under the National Housing Act, and also, for the first time, to make conventional residential mortgage loans. In the case of conventional residential mortgages, the amount of an individual mortgage cannot exceed 75% of the appraised value of the property. After 1973 the maximum amount of a bank's assets to be held in the form of conventional residential mortgages must not be more than 10% of the bank's Canadian dollar deposit liabilities plus debentures. In the interval, the percentage limitation will rise by 1% each fiscal year; it was 4% until October 31, 1968 when it rose to 5% for the subsequent fiscal year and will so continue until the 10% maximum is reached.

The banks have also been given authority to issue their own debentures with an original term to maturity of at least five years; such securities are not subject to reserve requirements and rank in priority after deposit liabilities. The amount of debentures that any bank may have

outstanding is limited by restricting the increase per annum to 10% of the paid-up capital and rest fund and an upper limit of one half of the bank's paid-up capital and rest fund.

The amendments to the Bank Act in 1967 contained a number of revisions respecting the ownership of Canadian chartered banks. No individual or associated shareholders may vote more than 10% of a bank's total shares outstanding and, if more than 25% of a bank's shares are owned by non-residents, the total outstanding liabilities of the bank may not exceed 20 times its authorized capital stock.

The Bank Act also stipulates the minimum statutory cash reserve requirement that the chartered banks must observe. The minimum amount of Bank of Canada notes and deposits each bank must hold as cash reserves was changed in a series of monthly steps from 8% of all Canadian dollar deposits under the old Bank Act to 12% of demand deposits and 4% of other deposits as at February 1968. In addition, the Bank of Canada was given stand-by powers to require the banks to hold a "secondary reserve" which would consist of cash in excess of their statutory requirements, holdings of treasury bills and day-to-day loans to investment dealers. When initially introduced, this secondary reserve cannot exceed 6% of a bank's deposit liabilities. Thereafter it may be increased in monthly steps of 1% to a maximum of 12%. The Bank of Canada may reduce or remove such a secondary reserve at any time. Effective April 1968, the required level was 7%; effective June 1969, it was increased to 8% and, effective July 1970, to 9%; effective December 1971, it was reduced to 8.5% and to 8% effective January 1972.

Chartered bank financial statistics for recent years are given in Tables 19.8 - 19.12; month-end data are available in the *Bank of Canada Review*.

Branches of chartered banks. Although there are fewer chartered banks now than at the beginning of the century, there has been a great increase in the number of branch banking offices. As a result of amalgamations, the number of banks declined from 34 in 1901 to ten in 1931, and remained at that figure until the incorporation of a new bank — The Mercantile Bank of Canada — in 1953 brought the total to 11. Since then the amalgamation in 1955 of the Bank of Toronto and the Dominion Bank as the Toronto Dominion Bank, the amalgamation of Barclays Bank (Canada) with the Imperial Bank of Canada in 1956 and the amalgamation of the Canadian Bank of Commerce and the Imperial Bank of Canada as the Canadian Imperial Bank of Commerce on June 1, 1961 reduced this number to eight. The Bank of British Columbia was granted a charter by Parliament in December 1966 and commenced operations in July 1968. The Unity Bank of Canada was granted a charter in November 1972 and will commence operations in 1973, increasing the number of banks to ten. The number of branches of chartered banks in each province periodically from 1920 to 1972 is given in Table 19.13.

Branches of individual Canadian chartered banks by province and outside Canada as at December 31, 1971-72 are given in Tables 19.14 and 19.15.

Cheque payments. Historical data on a monthly basis are available from 1924 on the amount of cheques charged to customer accounts in 35 major clearing centres. The value of payments rose steadily throughout the country from 1924 to 1929. From 1929 to 1932 the value declined sharply and thereafter fluctuated within rather narrow limits until the outbreak of World War II. Since 1939, the total value of cheques cashed in these centres has increased steadily (see Table 19.16). The value of cheques cashed in 50 clearing centres during 1971 reached a high of \$926,960.0 million, an increase of 13.3% above the value of \$817,910.5 million for 1970. All five geographic regions showed increases, with Ontario recording a gain of 15.3%, the Prairie Provinces 5.0%, the Atlantic Provinces 8.0%, Quebec 14.3% and British Columbia 13.2%. Payments in the two leading centres also reached all-time highs, Toronto advancing 15.0% and Montreal 14.0% over 1970.

19.1.5 Other banking institutions

In addition to the savings departments of the chartered banks and of trust and loan companies, there are provincial government savings banking institutions in Ontario and Alberta, and the Montreal City and District Savings Bank in Quebec, established under federal legislation and reporting monthly to the Department of Finance. Co-operative credit unions also encourage savings and extend small loans to their members.

Province of Ontario Savings Office. The establishment of the Province of Ontario Savings Office was authorized by the Ontario Legislature at the 1921 Session and the first branches were opened in March 1922. Interest at the rate of 5% per annum (as at June 1, 1972),

Financial institutions' assets, 1960-71



compounded half-yearly, is paid on accounts and deposits are repayable on demand. Total deposits as at December 31, 1972 were \$167 million and the number of depositors was approximately 67,500; 21 branches are in operation throughout the province.

Province of Alberta Treasury branches. Deposits are accepted at 74 branches and 78 agencies throughout the province. As at March 31, 1972, deposits totalled \$292.8 million, consisting of demand savings, on which cash orders can be drawn and on which interest is paid at 3½% per annum, \$41.4 million; super savings, permitting personal withdrawals and on which interest is paid at 5% per annum, \$59.4 million; term deposits, for terms ranging from 30 days to five years, bearing interest at rates comparable with those paid on the open market, \$92.1 million; and current accounts, on which no interest is paid, \$99.9 million. Total loans as at March 31, 1971 were \$151.5 million.

The Montreal City and District Savings Bank was founded in 1846 and has operated under a federal charter since 1871. At October 31, 1972, it had a paid-up capital and reserve of \$23.0 million, savings deposits of \$657.2 million and total liabilities of \$701.8 million. Assets of a like amount included \$238.5 million, consisting of federal, provincial, municipal and other securities.

Credit unions. The first credit union in Canada was founded in Lévis, Que., in 1900 to promote thrift by encouraging saving and to provide loans to members who could not get credit elsewhere or could get it only at high interest rates. For many years growth was slow; in 1911, when the first figures were available, assets amounted to \$2 million and by 1940 they were only \$20 million. However, since that time there has been a spectacular increase. Assets of the Quebec credit unions amounted to over \$1,000 million at the end of 1964 and to over \$3,000 million at the end of 1971. In other provinces, credit unions have not attained the same importance as they have in Quebec; the first credit union legislation was passed in Nova Scotia in 1932 followed by legislation in Manitoba and Saskatchewan in 1937 and in Ontario and British Columbia in 1938.

Credit unions are under provincial legislation. Almost all local offices in each province belong to central credit unions operating within the province either directly or through regional unions. There is a considerable difference between Quebec and the other provinces in the asset-holding of credit unions; Quebec unions have a large proportion of their investments in the form of mortgages and government bonds while unions in the other provinces have a greater percentage in loans. Credit unions probably play their most important role in smaller communities where they may function to a large extent as local banks. The number of chartered credit unions in Canada at the end of 1971 was 4,441 which reported a total membership of 5.6 million and assets of \$5,588 million (Table 19.17). Quebec, with 3.2 million members and assets of \$3,046 million accounted for 57% and 54%, respectively, of total membership and total assets of all credit unions in Canada. Credit unions classified by bond of association on a percentage basis were: occupational 27, residential 61 and associational 12.

Canadian credit unions in the 1961-71 decade have continued their steady growth (Table 19.18). Loans granted by credit unions increased by 2.7% in 1971 to reach \$1,829 million, being a 217% increase over the corresponding figure of \$570 million in 1961. Assets at \$5,588 million increased by 205% and savings at \$5,159 million increased by 225% in the same comparison. Membership of 5.6 million represented 25% of the total population, compared with 2.8 million and 15%, respectively, in 1961. Assets, liabilities and members' equity of local credit unions in Canada are given in Table 19.19.

There were 20 central credit unions in 1971; these unions act as credit unions for the credit unions, mainly by accepting deposits of surplus funds from them and providing a source of funds for them to borrow when they cannot meet the demand for local loans. Most of the centrals also admit co-operatives as members. Total assets of the centrals increased by 29% to \$852 million and loans to members increased 2% to \$478 million over the previous year. The Canadian Co-operative Credit Society serves as a central credit union for the provincial centrals and large co-operatives all across Canada.

19.2 Other financial institutions

19.2.1 Trust and mortgage companies

Trust and mortgage companies are registered with either the federal or provincial governments. They operate under the Loan Companies Act (RSC 1970, c.L-12) and the Trust Companies Act (RSC 1970, c.T-16, as amended) or under corresponding provincial legislation.

Trust companies operate as financial intermediaries in the same way as mortgage companies, chartered banks or savings and other financial institutions and are the only corporations in Canada with power to act as trustees for property interests and to conduct other fiduciary business. In this capacity they act as executors, trustees and administrators under wills or by appointment, as trustees under marriage or other settlements, as agents in the management of estates of the living, as guardians of minor or incapable persons, as financial agents for municipalities and companies, as transfer agents and registrars for stock and bond issues, as trustees for bond issues and, where so appointed, as authorized trustees in bankruptcies.

Trust and mortgage companies were established and grew rapidly under provincial

legislation in the late nineteenth and early twentieth centuries. Some companies were chartered by special Acts of Parliament but it was not until 1914 that the federal government began to regulate trust and mortgage companies registered under its Acts. In 1970 there were nine federal trust companies and 13 federal mortgage companies. The Superintendent of Insurance examines these companies and also, by arrangement with the provinces, trust and mortgage companies incorporated in Nova Scotia and trust companies incorporated in New Brunswick and Manitoba. Companies must be licensed by each province in which they wish to operate.

Although there are many differences among the various federal and provincial Acts, the broad lines of the legislation are common. In their intermediary business the companies have the powers mentioned above to borrow or, in the case of trust companies, accept funds in guaranteed accounts subject to maximum permitted ratios of these funds to shareholders' equity. The funds may be invested in specified assets which include first mortgages on real property, government securities, and the bonds and equity of corporations having established earnings records, and the companies may grant loans on the security of such bonds and stocks and unsecured personal loans. Trust and mortgage companies are not required to hold specified cash reserves, as are the chartered and savings banks, but there are broadly defined "liquid asset" requirements in a number of the Acts.

In the 1920s trust and mortgage companies held about one half of the private mortgage business in Canada but their growth rate fell off sharply because of the effect on the mortgage business of the depression and World War II. In the years since then the strong demand for mortgage financing has led to sustained rapid expansion.

At the end of 1971, total assets net of investment in subsidiaries of trust companies in the Statistics Canada survey were \$7,403 million compared with \$6,514 million a year earlier, an increase of 14%. Trust companies, while not specializing in mortgage financing, have been putting a high proportion of their funds into these investments with the result that mortgages represented 60% of their total assets at the end of 1971. The trust companies had \$5,126 million in term deposits outstanding and \$1,684 million in demand deposits at the end of 1971, accounting for 91% of total funds. About one third of the demand or savings deposits were in chequable accounts. There is considerable variety among the trust companies and a few have developed a substantial short-term business, raising funds by issuing certificates for terms as short as 30 days and also operating as lenders in the money market. Nevertheless, it remains true that the main business of the trust companies in their intermediary role is to channel savings into mortgages and other long-term investments. In addition, trust companies, as at December 31, 1971 had \$24,645 million under administration in estate, trust and agency accounts. Summary statistics are given in Tables 19.20 - 19.22.

Mortgage companies had assets before investment in subsidiaries of \$3,864 million at the end of 1971 compared with \$3,428 million a year earlier. Their holdings of mortgages amounted to \$3,152 million, or 82% of total assets. To finance their investments, these companies had borrowed \$2,700 million or 70% of their total funds by the sale of debentures and \$546 million from demand deposits.

More complete and up-to-date financial information may be found in quarterly financial statements published by Statistics Canada and the Bank of Canada, the reports of the Superintendent of Insurance on loan and trust companies and the reports of provincial supervisory authorities.

19.2.2 Small loans companies

Small loans companies and money-lenders are subject to the Small Loans Act (RSC 1970, c.S-11). This Act, first passed in 1939, sets maximum charges on personal cash loans not in excess of \$1,500 and is administered by the Department of Insurance. Lenders not licensed under the Act may not charge more than 1% per month. Those wishing to make small loans at higher rates must be licensed each year by the Minister of Finance under the Small Loans Act. The Act allows maximum rates, including charges of every kind, of 2% per month on unpaid balances not exceeding \$300, 1% per month on the portion of unpaid balances exceeding \$300 but not exceeding \$1,000 and one half of 1% on any remainder of the balance exceeding \$1,000. Loans in excess of \$1,500 are not regulated and lenders operating entirely above this limit and the larger loans of licensed lenders are thus exempt from the Act. Nor does the Act regulate charges for the instalment financing of sales. Prior to January 1, 1957, the Act applied only to

loans of \$500 or less and the maximum interest charge allowed was 2% per month.

At the end of 1971, there were five small loans companies and 40 money-lenders licensed under the Act. Small loans companies are incorporated federally; money-lenders include provincially incorporated companies. Many of the small loans companies and money-lenders are affiliated with other financial institutions, principally Canadian sales finance companies and United States finance or loan companies. The affiliations with sales finance companies reflect the close relationship between instalment financing and the consumer loan business.

Statistics Canada publishes quarterly balance sheets for sales finance and consumer loan companies as a whole and does not attempt to distinguish the two groups within the industry (see *Financial institutions*, Catalogue No. 61-006).

The subsidiary small loans companies and money-lenders obtain most of their funds through their parent companies. A few of the larger companies have supplemented their bank loans by selling short-term paper in the market but the amount has been small compared with the short-term market borrowing of the sales finance companies. The smaller independent companies rely mainly on their shareholders and on borrowing from the chartered banks.

Annual figures of assets and liabilities given in Table 19.23 for 1968-71 are from the Department of Insurance report. More complete data on the business of licensed lenders are given in the report on small loans companies and money-lenders, published annually by the Superintendent of Insurance.

There was a marked decrease in 1971 compared with 1970 in the number and amount of small loans made by the combined companies. Small loans made to the public during the year numbered 917,652 as against 1.0 million in 1970, a drop of about 11%; the amount of such loans decreased from \$637.1 million to \$573.2 million, a drop of about 10%. The average small loan made was \$625 in 1971 and \$621 in 1970. At the end of the year, small loans outstanding numbered 875,366 for an amount of \$439.6 million, or an average of \$502 per loan; comparable figures for 1970 were 1.0 million, \$524.8 million and \$505, respectively.

Gross profits of small loans companies and money-lenders before income taxes and before taking into account any increase or decrease in reserves for bad debts increased from \$55.9 million in 1970 (\$2.5 million being the profit on small loans and \$53.4 million the profit on business other than small loans) to \$59.8 million in 1971 (\$233,000 being the profit on small loans and \$59.6 million the profit on other business).

19.2.3 Foreign exchange

The dollar was established as the official currency of the united provinces of Canada on January 1, 1858, and extended to cover the new Dominion by the Uniform Currency Act of 1870. The gold sovereign remained the standard for the Canadian dollar until 1910 when the currency was defined in terms of fine gold, making it the exact gold equivalent of the United States dollar. Both British and US gold coins, however, were legal tender in Canada during this period.

The 1870 Act defined the Canadian dollar as 15/73 of the British gold sovereign, that is, the par rate of exchange between the dollar and the pound sterling was fixed at \$4.866, making the Canadian currency the equivalent of the US dollar at parity. With minor variations the value of the pound sterling in Canada remained at this level until 1914.

For a complete description of the fluctuations between the Canadian and US dollars up to 1950 see the *1972 Canada Year Book*, pp. 1252-1254.

On September 30, 1950, the Minister of Finance announced that official fixed foreign exchange rates which had been in effect at varying levels since 1939 would be withdrawn effective October 2, and that the rate would henceforth be determined in the market for foreign exchange. This policy was carried out within the framework of exchange control until December 14, 1951, at which time the Foreign Exchange Control regulations were revoked by the Governor in Council, terminating the period of exchange control that had prevailed in Canada since 1939. The Foreign Exchange Control Act was repealed in 1952. On May 2, 1962, the Minister of Finance announced that the Canadian dollar was being stabilized at a fixed par value of 92½ cents in terms of United States currency. This action was taken with the concurrence of the International Monetary Fund (IMF) and, in accordance with the Articles of Agreement of that organization, the Government of Canada undertook to maintain the Canadian exchange rate within a margin of 1% on either side of the established par value.

On May 31, 1970, the Government of Canada announced a decision not to maintain the

exchange rate of the Canadian dollar within the 1% parity band prescribed by the IMF for the time being. The movements of the US dollar in Canadian funds from January 1965 to December 1972 are shown in Table 19.24. Details of Canada's official international reserves and exchange fund account are presented in Table 19.25.

19.2.4 The bond market

Sales of Canadian bonds. A net total of \$6,514 million was raised in the bond market by all three levels of government in Canada as well as Canadian corporate borrowers in 1971, about \$650 million more than that raised in 1970. Major bond borrowers were the Government of Canada and provincial governments, recording net new issues of \$2,531 million and \$2,253 million, respectively.

The \$2,253 million of new issues of provincial governments included \$915 million purchased by the Canada Pension Plan Investment Fund and about \$174 million through the Quebec Pension Plan. Net new market issues of municipal government bonds amounted to \$199 million. Corporations resorted to bond financing to the extent of \$1,475 million and other institutions had net new issues in 1971 of \$56 million.

Government of Canada bonds for terms of ten years and over yielded 6.56% at the end of December 31, 1971 compared to 6.99% a year earlier. Comparable figures for provincial issues were 7.75% and 8.25%, and for those of municipalities, 7.85% and 8.74%.

There was an increase of \$188 million in finance and loan company paper, and of \$8 million in bankers' acceptances in 1971. Yields on 90-day finance company paper at 4.32% at the end of 1971 were considerably lower than the 5.50% a year earlier.

Bonds outstanding. Total government and business bonds outstanding at the end of 1971 amounted to \$77,034 million, an increase of 9% over 1970 and 48% since 1966. In the 1966-71 period, the largest increase was one of 77% in the bonded debt of provincial governments. This increase includes issues held in the Canada Pension Plan Investment Fund and the Quebec Deposit and Investment Fund since the inception of the plans in 1966. Corporate bonds outstanding increased by 49% and municipal government bonds by 24% between 1966 and 1971 (Table 19.26).

Distribution of bond holdings. Table 19.27 shows the estimated distribution as at December 31, 1971 of government and corporate bonds among the major purchasers of securities. Governments and the financial institutions specified in the Table held more than one half of the total; of the remainder, non-residents held about 19% and all other residents held 28%. Of the 28%, however, 13% was made up of Canada Savings Bonds. The largest identified holders of bonds were chartered banks with 12% of total, trustee pension plans with 8% and life insurance companies with 7%.

19.3 Insurance

Insurance business is transacted in Canada by about 900 companies and societies. All of them are licensed or registered by provincial insurance authorities; at the end of 1971, 435 were also registered by the federal Department of Insurance. Details of the classes of insurance each company or society is authorized to transact and statistical information may be found in the various published reports of the individual superintendents of insurance for the provinces. Financial statistics of the federally registered companies and fraternal benefit societies are published in the annual three-volume *Report of the Superintendent of Insurance for Canada*.

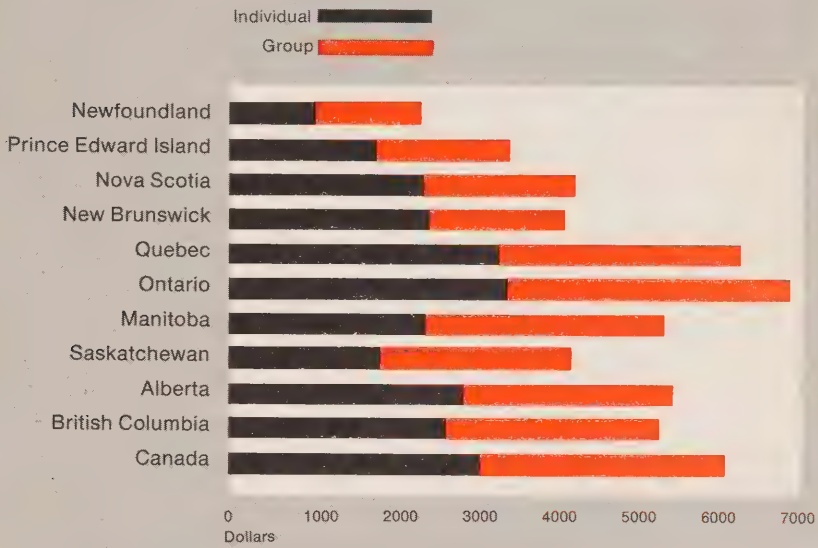
19.3.1 Life insurance

Total life insurance in force in Canada at the end of 1971 amounted to \$133,345 million of which about 92% was written by federally registered companies and fraternal benefit societies. The remainder was written by companies and societies that were provincially licensed only.

At the end of 1971, 134 companies were registered by the federal Department of Insurance to transact life insurance (50 Canadian, 13 British and 71 foreign). There were also 46 registered fraternal benefit societies (15 Canadian and 31 foreign).

The business of federally registered companies in Canada grew from \$91 million in 1880 to \$121,891 million at the end of 1971. Table 19.28 gives figures since 1880 for amounts of new insurance effected during the indicated year and an analysis of amounts in force at the end of the year among Canadian, British and foreign companies. Canadian companies reported an additional \$35,275 million amounts in force out of Canada at the end of 1971.

Per capita ownership of life insurance, by province and by type of insurance, end of 1971



During 1971, there were over 678,000 new policies effected with a value of nearly \$16,000 million. Over 130,000 policies ceased by death or maturity with a value of over \$528 million. Tables 19.29 and 19.30 compare newly effected written business and total amounts in force for 1970 and 1971.

Net insurance premiums written in 1971 totalled \$1,435 million as compared with \$1,349 million in 1970. Net insurance claims (death, disability and maturity) totalled \$546 million in 1971 as compared with \$513 million in 1970. Table 19.31 gives a provincial analysis of the premium income in 1971 on a direct written basis.

Assets of Canadian life insurance companies on a world-wide basis totalled over \$17,000 million at the end of 1971. Assets of British companies applicable to business in Canada, on deposit with the Receiver General, vested in trust or secured by policies in Canada, totalled \$1,266 million. Those of foreign companies on a similar basis totalled \$2,585 million. In addition, there were assets under the control of the Chief Agent in Canada: \$71 million for British companies and \$86 million for foreign companies. The major categories of assets and related liabilities for 1970 and 1971 are given in Table 19.32.

Total income of Canadian companies amounted to \$3,284 million of which \$733 million was applicable to out-of-Canada business. The income of British companies applicable to Canadian business totalled \$252 million; and of foreign companies, \$601 million. The major sources of income and selected expenditures are given in Table 19.33.

For registered fraternal benefit societies, the certificates in force in Canada totalled \$2,204 million at the end of 1971, as compared to \$1,925 million at the end of 1970. Premiums written in Canada totalled \$34,908 million during 1971, of which \$27,765 million was applicable to Canadian societies and \$7,143 million to foreign societies. Canadian societies also reported \$56,908 million in premiums written out of Canada.

Preliminary figures, subject to change, showing the results of the insurance business in Canada for the year 1972 as transacted by insurance companies and fraternal societies registered with the Department of Insurance at Ottawa have now been compiled from the annual statements filed with the Department.

For life insurance companies, the net amount of life insurance effected in Canada during 1972 was \$17,547 million, an increase over 1971 of \$1,607 million or 10%. Of this amount,

individual insurance amounted to \$9,721 million and group insurance to \$7,826 million. The net amount of life insurance in force in Canada on December 31, 1972, was \$135,431 million, an increase over the corresponding amount in force at the end of 1971 of \$13,540 million or 11%. Of this amount, individual insurance amounted to \$66,237 million and group insurance to \$69,194 million. Canadian companies carried \$95,714 million. British companies \$6,944 million and foreign companies \$32,773 million.

The net insurance premium income for life insurance companies in Canada during 1972 was \$1,510 million and the net annuity considerations were \$749 million (including amounts received from policyholders for segregated funds). For the year 1971, these figures were \$1,435 million and \$578 million, respectively.

For fraternal societies, the net amount of life insurance in force in Canada on December 31, 1972 was \$1,459 million, a decrease over 1971 of \$745 million or 34%. Canadian societies carried \$1,248 million and foreign societies \$211 million.

19.3.2 Fire and casualty insurance

Premiums written in Canada for property insurance, automobile insurance, personal accident and sickness insurance, liability insurance and other forms of casualty insurance (excluding marine insurance) totalled \$2,435 million of which about 84% was written by federally registered companies. The remainder was written by other provincially licensed companies including a large number of parish, municipal, county and farmers' mutuals, by Lloyd's and by provincial government insurance offices.

At the end of 1971, there were 358 companies (121 Canadian, 50 British and 187 foreign) registered by the federal Department of Insurance to transact other than life insurance. Of these, 103 were life companies whose non-life business was ordinarily only personal accident and sickness insurance.

For federally registered companies, the premium income on a net basis has increased from just under \$4 million in 1880 to \$2,013 million in 1971. An analysis of premiums and related total claims by class of insurance (including marine) is given in Table 19.34 and by province in Table 19.35.

Assets of Canadian fire and casualty companies on a world-wide basis totalled \$1,632 million at the end of 1971. Assets of British companies applicable to their in-Canada business, on deposit with the Receiver General or vested in trust, totalled \$391 million. Those of foreign companies on a similar basis totalled \$1,024 million. In addition, there were assets under the control of the Chief Agent in Canada: \$143 million for British companies and \$246 million for foreign companies. The major categories of the assets and their related liabilities for 1970 and 1971 are given in Table 19.36.

Underwriting experience in Canada over the past ten years has ranged from a loss of \$67 million in 1963 to a gain of \$51 million in 1967. The loss for 1971 was nearly \$34 million.

Preliminary statistics for 1972. (See Table 19.37.) Property insurance net premiums written in Canada during 1972 were \$586 million, an increase over 1971 of \$55 million or 10%. The net premiums earned in 1972 were \$558 million and the net claims incurred were \$343 million indicating a claims ratio of 62%. The claims ratio for 1971 was 60%. Net premiums for automobile insurance written in Canada during 1972 were \$981 million, an increase over 1971 of \$84 million or 9%. The net premiums earned in 1972 were \$943 million and the net claims incurred were \$711 million, indicating a claims ratio of 75%. The claims ratio for 1971 was 71%.

Personal accident and sickness insurance net premiums written in Canada during 1972 were \$478 million, an increase over 1971 of \$75 million or 19%. The net premiums earned in 1972 were \$460 million and the net claims incurred were \$364 million indicating a claims ratio of 79%. The claims ratio for 1971 was 79%. Net premiums for liability insurance written in Canada during 1972 were \$111 million, an increase over 1971 of \$17 million or 18%. The net premiums earned in 1972 were \$105 million and net claims incurred were \$60 million indicating a claims ratio of 57%. The claims ratio for 1971 was 63%.

19.3.3 Fire losses

In 1971 the number of fires reported in Canada increased to 72,729 from 67,719 in 1970 and 64,914 in 1969, but decreased compared with the 83,706 and 85,585 fires reported in 1961 and 1962. Fires in 1971 resulted in 739 deaths and property losses totalling \$236 million or \$10.89 per capita (Tables 19.38 and 19.39). Federal government property losses are now included in the provincial figures.

19.3.4 Government insurance

19.3.4.1 Federal government insurance

In recent years, various insurance schemes have been adopted by the federal government or undertaken co-operatively by the federal and provincial governments. Information on unemployment insurance, hospital insurance, veterans insurance, export credit insurance, etc., will be found in the appropriate Chapters on Labour, Health and welfare, Foreign trade, etc.

Deposit insurance. The Canada Deposit Insurance Corporation was established in 1967 to provide, for the benefit of persons having deposits with a member of the Corporation, insurance against the loss of deposits up to a maximum of \$20,000 for any one depositor. Membership in the Deposit Insurance Corporation is obligatory for chartered banks, Quebec savings banks and those federally incorporated loan and trust companies that accept deposits from the public. Provincially incorporated loan and trust companies that accept deposits from the public are eligible to apply for membership if they have the consent of the province of incorporation. The definition of deposits, as set out in the general by-law of the Corporation, might be summarized as money received by a member institution that is repayable on demand or notice and money that is repayable on a fixed date not more than five years after the date on which the money is received. Deposits not payable in Canada or in Canadian currency are not insured.

19.3.4.2 Provincial government insurance

Manitoba. The Manitoba Public Insurance Corporation is a Crown corporation established under the Automobile Insurance Act. The Act was proclaimed on September 21, 1970, and the Corporation was created by order of the Lieutenant-Governor in Council on September 29, 1970. The Act and its Regulations provide for the establishment of a universal, compulsory automobile insurance plan and of other plans of automobile insurance within the province.

The plan, known as Autopac, provides the following basic coverage on Manitoba-licensed motor vehicles: (1) bodily injury (including passenger hazard) and property damage liability to \$50,000; no-fault all-perils coverage with \$200 deductible and nil deductible for total loss covered by fire, lightning or theft of the entire vehicle; if a vehicle is stolen, the owner may be reimbursed for transportation expenses up to \$8 a day for up to 30 days; and (2) no-fault personal injury benefits (paid automatically without limiting the insured's right to seek a larger settlement); death benefits to a maximum of \$10,000; funeral expenses to a maximum of \$500; benefits up to \$6,000 for dismemberment, disfigurement, or impairment; loss-of-income payment of \$50 a week for total disability and \$25 a week for partial disability, beginning one week after disability; for a total disability, payments continue for the period during which the insured remains totally disabled, with no time limit, and for partial disability, payments continue up to 104 weeks.

Revenue for the plan comes from two sources — premiums on driver licences and premiums on vehicles. Premiums on driver licences recognize driver responsibility; a driver is allowed to accumulate five demerit points (based on driving infractions) before being assessed an additional driver-insurance premium. Premiums on vehicles are based on such factors as year, make, model, use and rating territory, based on the address of the vehicle owner.

The plan was inaugurated November 1, 1971 for an initial four-month period; thereafter, it operates concurrently with the 12-month vehicle registration period which is March 1 through the following February 28.

Saskatchewan. The Saskatchewan Government Insurance Office, a Crown corporation established by the Saskatchewan Government Insurance Act, 1944, commenced business in May 1945. It provides all types of insurance other than sickness and life. The aim of the legislation is to provide residents of the province with low-cost insurance designed for their particular needs. Rates are based on loss experience in Saskatchewan only and the surplus is invested, to the extent possible, within the province. Premium income for 1972 amounted to \$21.2 million and earned surplus amounted to \$44,294. The total amount made available to the Saskatchewan Government Finance Office from 1945 to December 31, 1972 was \$10 million. Assets at the latter date were \$55.5 million of which \$28 million was invested in bonds and debentures issued by the province and by Saskatchewan municipalities, hospitals and schools. Independent insurance agents, numbering 554, sell insurance throughout the province on behalf of the Office.

The Automobile Accident Insurance Act, administered by the Saskatchewan Government Insurance Office on behalf of the provincial government, provides a comprehensive automobile accident insurance plan for the protection of the public in the province. Premiums paid by motorists create a fund from which benefits are paid in the event of death, injury or damages sustained in automobile accidents. Any surplus over payments is used to increase benefits, reduce premiums or absorb deficits in periods of high accident frequency. The surplus is not transferable to the general operation of the Saskatchewan Government Insurance Office, nor is any surplus credited to the provincial government. The plan provides protection against loss arising out of a motorist's liability to pay for bodily injury or death of others and damage to property of others, up to a limit of \$35,000, regardless of the number of claims arising from any one accident. Comprehensive coverage, including collision and upset, subject to \$200 deductible for private passenger cars and farm trucks is also provided. Rates vary from \$6 to \$104 for private passenger cars and \$5 to \$45 for farm trucks. There are various rates for other types of motor vehicles depending on size and usage. From the inception of the Act in 1946 to December 31, 1972 more than \$235 million was paid in claims.

The Saskatchewan Government Insurance Office, under contract with the Saskatchewan Department of Natural Resources, offers insurance to farmers covering damage to unharvested crops by certain wildlife such as ducks, geese, sandhill cranes, deer, elk, bear and antelope.

Alberta. Provincial government insurance in Alberta, coming within the purview of the Alberta Insurance Act, relates to the Alberta General Insurance Company, in which the entire business of the fire branch of the Alberta Government Insurance Office was vested by the Legislature on March 31, 1948, and to the Life Insurance Company of Alberta, which was constituted on the same date to take over the life branch of the Alberta Government Insurance Office. Each company is administered by a separate board of directors. The Lieutenant-Governor in Council appoints the members to the respective boards but the charter of the Life Insurance Company of Alberta provides for the election of two policyholder directors. Although both companies are Crown corporations, they are not entitled to the usual immunities of the Crown, since they may sue and be sued in any court of competent jurisdiction.

A variety of agencies in Alberta offer forms of prepaid protection corresponding to insurance but the nature of the enabling legislation governing these plans emphasizes the fact that they do not constitute insurance. Because such exemptions are specifically provided by the insurance laws of the province, reference to these plans is necessary only to make it clear that they do not come within the scope of the Alberta Insurance Act. It should be noted that the Alberta Hail Insurance Act and the Alberta Crop Insurance Act are administered by the Alberta Hail and Crop Insurance Corporation and each contains a clause exempting its operations from the provisions of the Alberta Insurance Act.

Sources

- 19.1.1 - 19.1.2 Banking and Financial Analysis Department, Bank of Canada.
- 19.1.3 Royal Canadian Mint.
- 19.1.4 Banking and Financial Analysis Department, Bank of Canada; The Canadian Bankers' Association; Business Finance Division, General Statistics Branch, Statistics Canada.
- 19.1.5 The Province of Ontario Savings Office; Treasury Department, Government of Alberta; The Montreal City and District Savings Bank; Business Finance Division, General Statistics Branch, Statistics Canada.
- 19.2.1 Business Finance Division, General Statistics Branch, Statistics Canada.
- 19.2.2 Special Services Division, Department of Insurance.
- 19.2.3 Banking and Financial Analysis Department, Bank of Canada.
- 19.2.4 Financial Flows Division, Current Accounts Branch, Statistics Canada.
- 19.3.1 - 19.3.2 Special Services Division, Department of Insurance.
- 19.3.3 Dominion Fire Commissioner, Department of Public Works.
- 19.3.4 Canada Deposit Insurance Corporation; The Manitoba Public Insurance Corporation; Saskatchewan Government Insurance Office; Superintendent of Insurance, Department of the Attorney General, Alberta.

Tables

.. not available
 ... not appropriate or not applicable
 — nil or zero
 -- too small to be expressed

e estimate
 p preliminary
 r revised
 certain tables may not add due to rounding

19.1 Bank rates from June 24, 1962 to Dec. 31, 1972

Date of change	% per annum	Date of change	% per annum	Date of change	% per annum
June 24, 1962	6.00	Apr. 7, 1967	4.50	June 11, 1969	7.50
Sept. 7, 1962	5.50	Sept. 27, 1967	5.00	July 16, 1969	8.00
Oct. 12, 1962	5.00	Nov. 20, 1967	6.00	May 12, 1969	7.50
Nov. 13, 1962	4.00	Jan. 22, 1968	7.00	June 1, 1970	7.00
May 6, 1963	3.50	Mar. 15, 1968	7.50	Sept. 1, 1970	6.50
Aug. 12, 1963	4.00	July 2, 1968	7.00	Nov. 12, 1970	6.00
Nov. 24, 1964	4.25	July 29, 1968	6.50	Feb. 15, 1971	5.75
Dec. 6, 1965	4.75	Sept. 3, 1968	6.00	Feb. 24, 1971	5.25
Nov. 14, 1966	5.25	Dec. 18, 1968	6.50	Oct. 25, 1971	4.75
Jan. 30, 1967	5.00	Mar. 3, 1969	7.00		

19.2 Assets and liabilities of the Bank of Canada, as at Dec. 31, 1970-72 (million dollars)

Item	1970	1971	1972
Assets			
Foreign exchange	58.0	43.1	54.0
Advances to chartered and savings banks	—	2.0	1.9
Bills bought in open market, excluding treasury bills	—	1.0	—
Investments			
Treasury bills of Canada	621.2	885.2	932.1
Other securities issued or guaranteed by Canada maturing within three years	1,702.6	1,769.8	2,053.3
Other securities issued or guaranteed by Canada not maturing within three years	1,917.5	2,160.5	2,421.5
Bonds and debentures issued by Industrial Development Bank	415.6	457.9	527.1
Other securities	136.5	217.2	416.6
Industrial Development Bank capital stock	54.0	56.0	59.0
Bank premises	28.6	22.2	23.1
All other assets	471.1	403.9	567.7
Total, assets	5,405.0	6,018.8	7,056.3
Liabilities			
Capital paid up	5.0	5.0	5.0
Reserve fund	25.0	25.0	25.0
Notes in circulation			
Held by chartered banks	526.1	597.5	750.5
All other	3,106.2	3,505.9	4,055.7
Deposits			
Government of Canada	228.0	68.4	26.6
Chartered banks	1,176.4	1,472.8	1,697.9
Other	38.0	44.0	52.3
Foreign currency liabilities	32.6	39.1	58.0
All other liabilities	267.7	261.1	385.3
Total, liabilities	5,405.0	6,018.8	7,056.3

19.3 Assets and liabilities of the Industrial Development Bank, as at Sept. 30, 1970-72

Item	1970	1971	1972
Assets			
Loans outstanding ^{1,2}	\$'000,000 477.0	529.3	594.5
Other assets	10.5	14.5	14.7
Total, assets	487.5	543.8	609.2
Liabilities			
Capital and reserves	74.3	78.2	84.8
Bonds and debentures outstanding	394.1	445.5	501.7
Other liabilities	19.1	20.1	22.7
Total, liabilities	487.5	543.8	609.2
Loan transactions			
Disbursements ¹	151.0	156.2	194.0
Repayments ¹	81.7	100.4	125.9
Loans outstanding plus undistributed authorizations ¹	557.5	616.6	719.6
Customers on books	No. 12,285	13,925	16,075

¹ Includes investments; the change in loans outstanding does not equal the difference between disbursements and repayments because of year-end accounting adjustments.

² Includes agreements of sale.

19.4 Bank of Canada note liabilities, as at Dec. 31, 1970-72 (thousand dollars)

Denomination	1970	1971	1972
Bank of Canada notes			
\$1	145,100	152,542	164,282
\$2	99,847	106,421	118,107
\$5	235,119	252,204	283,856
\$10	736,715	791,521	879,661
\$20	1,455,063	1,676,013	2,003,765
\$25	46	46	46
\$50	249,762	286,538	336,195
\$100	654,032	768,859	928,878
\$500	30	30	30
\$1,000	43,701	56,352	78,528
Total	3,619,414	4,090,525	4,793,348
Note issues in process of retirement ¹	12,903	12,898	12,894
Total, Bank of Canada note liabilities	3,632,317	4,103,423	4,806,242
Held by:			
Chartered banks	526,081	597,542	750,498
Others	3,106,236	3,505,881	4,055,744

¹ Includes, in 1972, chartered banks' notes \$8,142,000, Dominion of Canada notes \$4,636,000, provincial notes \$28,000 and defunct banks' notes \$88,000; these amounts have changed little in recent years.

19.5 Canadian dollar currency and chartered bank deposits, as at Dec. 31, 1965-72 (million dollars)

Year	Currency outside banks			Chartered bank deposits				Total currency and chartered bank deposits ¹		
	Notes	Coin	Total	Personal savings deposits	Government of Canada deposits	Other deposits ¹	Total ¹	Total including government deposits	Held by general public including personal savings deposits	Excluding personal savings deposits
1965	2,153	266	2,419	9,725	797	7,201	17,723	20,142	19,345	7,576
1966	2,296	293	2,589	10,248	919	7,741	18,908	21,497	20,578	10,330
1967	2,494	335	2,829	11,760	618	9,096	21,473	24,302	23,685	11,925
1968	2,660	399	3,059	13,622	669	10,507	24,798	27,857	27,188	13,566
1969	2,903	434	3,337	15,030	1,308	9,540	25,878	29,214	27,906	12,876
1970	3,106	461	3,568	16,615	1,257	10,972	28,845	32,412	31,155	14,540
1971	3,506	488	3,993	17,783	2,239	14,572	34,594	38,587	36,348	18,565
1972	4,056	518	4,574	19,949	2,407	16,892	39,248	43,822	41,415	21,466

¹ Less total float, i.e., cheques and other items in transit.

19.6 Canadian coin¹ in circulation, as at Dec. 31, 1965-72

Year	Silver \$'000	Nickel \$'000	Tombac ² \$'000	Steel \$'000	Bronze \$'000	Total \$'000	Per capita \$
1965	239,927	26,398	549	3,448	30,968	301,290	15.39
1966	263,557	27,052	549	3,447	33,107	327,712	16.37
1967	290,767	29,994	549	3,446	36,557	361,314	17.51
1968	316,837	75,464	549	3,445	39,705	436,000	20.82
1969	316,715	117,199	549	3,444	43,004	480,911	22.62
1970	316,610	137,890	549	3,444	46,092	504,583	23.60
1971	317,033	159,151	549	3,443	49,297	529,473	24.42
1972	317,269	185,141	549	3,442	53,494	559,896	25.65

¹ The figures shown are of net issues of coin.

² Tombac, a copper-zinc alloy, was used to conserve nickel for war purposes; no coins of this metal have been issued since 1944.

19.7 Receipts of gold bullion at the Royal Canadian Mint and bullion and coinage issued, 1965-72

Year	Gold received '000 oz. t.	Gold bullion issued '000 oz. t.	Silver coin issued \$'000	Nickel coin issued \$'000	Bronze coin issued \$'000
1965	2,991	3,027	33,479	3,878	2,961
1966	2,676	2,631	23,722	656	2,141
1967	2,439	2,288	27,322	2,944	3,451
1968	2,237	2,222	26,167	45,472	3,150
1969	2,147	2,089	—	41,741	3,301
1970	2,114	2,150	—	20,702	3,089
1971	2,010	2,009	556	21,277	3,207
1972	1,931	1,895	350	26,006	4,199

19.8 Statement of chartered bank assets and liabilities, as at Dec. 31, 1970-72 (thousand dollars)

Assets and liabilities	1970	1971	1972
Assets			
Gold coin and bullion	17,729	24,002	44,148
Other coin in Canada	43,215	41,943	41,533
Other coin outside Canada	1,390	1,319	1,242
Notes of and deposits with Bank of Canada	1,702,516	2,070,361	2,448,393
Government and bank notes other than Canadian	66,414	67,394	69,663
Deposits with banks in Canadian currency	168,820	298,260	269,666
Deposits with banks in currencies other than Canadian	7,526,478	7,668,562	9,524,095
Cheques and other items in transit (net)	967,851	1,040,562	1,191,326
Government of Canada treasury bills, at amortized value	2,688,911	2,700,482	2,964,432
Other Government of Canada issued or guaranteed securities maturing within three years, at amortized value	1,955,866	2,052,824	2,113,201
Government of Canada issued or guaranteed securities maturing after three years, at amortized value	1,956,737	2,581,957	2,050,781
Canadian provincial government issued or guaranteed securities, at amortized value	461,407	582,385	501,452
Canadian municipal and school corporation issued or guaranteed securities, not exceeding market value	375,332	466,464	489,054
Other Canadian securities, not exceeding market value	871,376	1,296,563	1,614,074
Securities other than Canadian, not exceeding market value	670,839	452,934	548,065
Mortgages and hypothecs insured under the National Housing Act 1954	1,100,352	1,681,045	2,436,223
Day, call and short loans to investment dealers and brokers in Canadian currency, secured	902,218	918,445	1,082,111
Day, call and short loans to investment dealers and brokers in currencies other than Canadian, secured	622,619	715,430	972,527
Loans to Canadian provincial governments in Canadian currency	91,223	36,925	64,608
Loans to Canadian municipalities and school corporations in Canadian currency, less provision for losses	792,015	737,350	829,602
Other loans in Canadian currency, less provision for losses	17,430,292	21,107,045	25,640,842
Other loans in currencies other than Canadian, less provision for losses	4,670,722	5,314,584	5,509,923
Bank premises at cost, less amounts written off	424,825	492,181	552,882
Securities of and loans to corporations controlled by the bank	239,555	247,636	241,360
Customers' liability under acceptances, guarantees and letters of credit, as per contra	1,484,065	1,763,445	1,944,765
Other assets	74,243	68,308	76,194
Total, assets	47,307,010	54,428,406	63,222,162
Liabilities			
Deposits by Government of Canada in Canadian currency	1,257,338	2,239,130	2,406,946
Deposits by Canadian provincial governments in Canadian currency	214,084	587,432	592,160
Deposits by banks in Canadian currency	269,812	350,749	414,329
Deposits by banks in currencies other than Canadian	4,915,125	6,419,118	8,410,824
Personal savings deposits payable after notice, in Canada, in Canadian currency	16,614,955	17,782,788	19,948,624
Other deposits payable after notice, in Canadian currency	4,449,632	6,214,608	7,643,511
Other deposits payable on demand, in Canadian currency	7,082,606	8,436,395	9,721,976
Other deposits in currencies other than Canadian	8,617,983	7,742,851	8,607,249
Advances from Bank of Canada, secured	—	2,000	1,900
Acceptances, guarantees and letters of credit	1,484,065	1,763,445	1,944,765
Other liabilities	160,904	269,182	300,907
Accumulated appropriations for losses	604,030	692,209	727,057
Debentures issued and outstanding	40,000	190,000	498,330
Capital paid up	305,808	307,800	321,354
Rest account	1,277,925	1,415,169	1,663,492
Undivided profits at latest financial year-end	12,743	15,530	18,738
Total, liabilities	47,307,010	54,428,406	63,222,162

19.9 Canadian cash reserves, 1965-72 (million dollars)

Year	Cash reserves			Canadian dollar deposit liabilities	Average cash reserve ratio
	Bank of Canada deposits	Bank of Canada notes	Total		
1965	965	427	1,392	17,186	8.1
1966	1,057	449	1,506	18,607	8.1
1967	1,110	487	1,597	20,668	7.7
1968	965	525	1,490	23,314	6.4
1969	1,090	560	1,650	25,916	6.4
1970	1,112	587	1,699	27,066	6.3
1971	1,356	610	1,966	31,329	6.3
1972	1,615	686	2,301	36,951	6.2

Bank of Canada deposits are averages of the juridical days in the month shown; Bank of Canada notes and Canadian dollar deposits are averages of the four consecutive Wednesdays ending with the second last Wednesday in the previous month. Until June 1967 the required cash reserve ratio was 8% on both demand and notice deposits. For the next eight months the required minimum monthly average on demand deposits was increased by $\frac{1}{2}$ of 1% per month and that on notice deposits was decreased by $\frac{1}{2}$ of 1%. Since February 1968 the required ratios have been 12% for demand deposits and 4% for notice deposits as prescribed under the Bank Act.

19.10 Classification of chartered bank deposit liabilities payable to the public in Canada in Canadian currency, as at Apr. 30, 1971 and 1972 (number of accounts)

Deposit accounts of the public of:	1971			1972		
	Personal savings deposit accounts	Other deposit accounts of the public	Total deposit accounts of the public	Personal savings deposit accounts	Other deposit accounts of the public	Total deposit accounts of the public
Less than \$100	7,380,380	2,482,432	9,862,812	7,504,833	2,517,582	10,022,415
\$100 or over but less than \$1,000	4,984,207	2,196,003	7,180,210	5,266,146	2,358,266	7,624,412
\$1,000 or over but less than \$10,000	3,426,376	728,228	4,154,604	3,644,923	833,587	4,478,510
\$10,000 or over but less than \$100,000	294,770	141,973	436,743	327,248	159,858	487,106
\$100,000 or over	5,032	17,471	22,503	3,791	22,982	26,773
Total, deposits	16,090,765	5,566,107	21,656,872	16,746,941	5,892,275	22,639,216

19.11 Classification of chartered bank loans in Canadian currency, as at Dec. 31, 1970 and 1971 (million dollars)

Class of loan	1970	1971
General loans		
Personal	5,277.9	6,532.6
To individuals, fully secured by marketable bonds and stocks	563.3	708.8
Home improvement loans	51.9	47.2
To individuals, not elsewhere classified	4,662.6	5,776.6
Farmers		
Farm Improvement Loans Act	303.0	331.6
Other farm loans	910.6	1,056.9
Industry	3,812.2	4,401.8
Chemical and rubber products	262.0	214.7
Electrical apparatus and supplies	270.4	233.4
Foods, beverages and tobacco	592.8	603.6
Forest products	479.7	549.7
Furniture	58.3	62.3
Iron and steel products	517.3	539.8
Mining and mine products	384.2	702.0
Petroleum and products	333.3	479.6
Textiles, leather and clothing	329.3	305.8
Transportation equipment	286.3	354.3
Other products	298.5	356.7
Merchandisers	1,542.1	1,679.0
Construction contractors	590.5	719.6
Public utilities, transportation and communications	525.2	728.3
Other business	2,429.9	3,539.5
Religious, educational, health and welfare institutions	334.2	337.1
Total, general loans	15,725.7	19,326.4
Other loans		
Provincial governments	91.2	36.9
Municipal governments and school districts	792.0	737.4
Stockbrokers	100.0	94.1
Investment dealers	492.7	566.0
Loans to finance the purchase of Canada Savings Bonds	245.6	290.8
Grain dealers and exporters	705.2	504.6
Instalment and other financial companies	396.7	357.7
Total, other loans	2,823.5	2,587.5
Total, loans in Canadian currency	18,549.2	21,913.9

19.12 Chartered bank revenues, expenses, shareholders' equity and accumulated appropriations for losses, as at Oct. 31, 1970-72 (million dollars)

Item	1970	1971	1972
For financial year ended Oct. 31			
Revenues			
Income from loans	2,758.2	2,652.8	2,923.5
Income from securities ¹	499.6	547.4	560.8
Other operating income	333.9	339.4	384.8
Total, revenues	3,591.7	3,539.6	3,869.1
Expenses			
Interest on deposits and bank debentures	2,043.0	1,859.2	1,928.5
Salaries, premiums, contributions and other staff benefits	619.8	670.9	740.1
Property expenses, including depreciation	176.4	196.5	217.9
Other operating expenses ²	224.0	256.0	313.0
Total, expenses ³	3,063.3	2,982.6	3,199.5
Balance of revenue ³	528.4	557.0	669.6

19.12 Chartered bank revenues, expenses, shareholders' equity and accumulated appropriations for losses, as at Oct. 31, 1970-72 (million dollars) (concluded)

Item	1970	1971	1972
Less:			
Loss experience not included in other operating expenses	52.7	-52.2	-8.3
Appropriations for losses, net ¹	8.9	88.2	34.9
Income taxes	277.9	275.5	311.1
Leaving for dividends and shareholders' equity	189.0	245.5	331.9
Dividends	108.1	115.5	130.0
Total additions to shareholders' equity	122.3	137.4	208.7
From above operations	81.5	130.0	201.9
From issue of new shares including premiums	40.8	7.4	6.8
As at end of financial year			
Shareholders' equity			
Undivided profits	13.2	13.5	16.7
Rest account	1,279.9	1,415.1	1,615.6
Capital paid up	305.8	307.8	312.8
Total, shareholders' equity	1,599.0	1,736.4	1,945.1
Accumulated appropriations for losses	604.0	692.2	727.0

¹ Excludes realized profits and losses on securities held in investment account which are included in the item "Loss experience not included in other operating expenses".

² Includes provision for losses based on five-year average loss experience and taxes other than income taxes.

³ Before provision for income taxes and appropriations for losses other than those included in "Other operating expenses".

⁴ General and tax-paid appropriations for losses: net after any transfers out of accumulated appropriations for losses to undivided profits or rest account.

19.13 Branches¹ of chartered banks, by province, as at Dec. 31, 1920-72

Province or territory	1920	1930	1940	1950	1960	1965	1970	1971	1972
Newfoundland	—	—	—	39	71	104	114	120	124
Prince Edward Island	41	28	25	23	27	29	30	30	30
Nova Scotia	169	138	134	144	173	189	202	205	209
New Brunswick	121	102	97	100	113	126	136	140	147
Quebec	1,150	1,183	1,083	1,164	1,427	1,580	1,524	1,508	1,506
Ontario	1,586	1,409	1,208	1,257	1,785	2,055	2,307	2,398	2,487
Manitoba	349	239	162	165	234	271	310	315	323
Saskatchewan	591	447	233	238	296	317	350	354	353
Alberta	424	304	172	246	394	457	521	539	563
British Columbia	242	229	192	294	514	580	684	716	736
Yukon Territory and Northwest Territories	3	4	5	9	17	16	21	27	30
Canada	4,676	4,083	3,311	3,679	5,051	5,724	6,199	6,352	6,508

¹ Figures include sub-agencies in Canada receiving deposits for the banks employing them; there were 627 such sub-agencies at Dec. 31, 1971 and 536 at Dec. 31, 1972.

19.14 Branches¹ of individual Canadian chartered banks, by province, as at Dec. 31, 1971 and 1972

Bank	Province or territory											
	Nfld.		PEI		NS		NB		Que.		Ont.	
	1971	1972	1971	1972	1971	1972	1971	1972	1971	1972	1971	1972
Bank of Montreal	35	35	3	3	30	31	25	26	210	212	424	439
The Bank of Nova Scotia	49	51	9	9	59	60	41	46	74	76	346	365
Banque Canadienne Nationale	—	—	—	—	—	—	—	—	504	486	17	17
Banque Provinciale du Canada	—	—	2	2	—	—	19	20	262	259	27	28
Canadian Imperial Bank of Commerce	15	16	9	9	29	31	22	21	184	187	676	691
The Mercantile Bank of Canada	—	—	—	—	1	1	—	—	2	2	1	1
The Royal Bank of Canada	20	20	6	6	82	82	27	28	189	196	461	484
The Toronto-Dominion Bank	1	2	1	1	4	4	6	6	83	88	446	462
Bank of British Columbia	—	—	—	—	—	—	—	—	—	—	—	—
Total	120	124	30	30	205	209	140	147	1,508	1,506	2,398	2,487
	Man.		Sask.		Alta.		BC		YT & NWT		Total	
	1971	1972	1971	1972	1971	1972	1971	1972	1971	1972	1971	1972
Bank of Montreal	69	73	64	63	112	119	143	147	5	6	1,120	1,154
The Bank of Nova Scotia	29	29	39	40	80	81	91	95	2	2	819	854
Banque Canadienne Nationale	5	5	—	—	—	—	—	—	—	—	526	508
Banque Provinciale du Canada	—	—	—	—	—	—	—	—	—	—	310	309
Canadian Imperial Bank of Commerce	76	80	105	105	157	163	215	216	15	17	1,503	1,536
The Mercantile Bank of Canada	1	1	—	—	2	2	1	1	—	—	8	8
The Royal Bank of Canada	88	88	102	102	114	117	160	164	3	3	1,252	1,290
The Toronto-Dominion Bank	47	47	44	43	74	81	87	92	2	2	795	828
Bank of British Columbia	—	—	—	—	—	—	19	21	—	—	19	21
Total	315	323	354	353	539	563	716	736	27	30	6,352	6,508

¹ Figures include sub-agencies in Canada for receiving deposits, 627 in 1971 and 536 in 1972.

19.15 Branches¹ of individual Canadian chartered banks outside Canada, as at Dec. 31, 1971 and 1972

Location	Bank of Montreal		The Bank of Nova Scotia		Canadian Imperial Bank of Commerce		The Royal Bank of Canada		The Toronto-Dominion Bank		Banque Canadienne Nationale		Total		
	1971	1972	1971	1972	1971	1972	1971	1972	1971	1972	1971	1972	1971	1972	
Antigua	—	—	1	1	1	1	1	1	—	—	—	—	3	3	
Argentina	—	—	—	—	—	—	3	3	—	—	—	—	3	3	
Bahamas	—	—	8	9	4	4	11	11	—	—	—	—	23	24	
Barbados	—	—	3	4	3	3	3	3	—	—	—	—	9	10	
Belgium	—	—	1	1	—	—	—	—	—	—	—	—	1	1	
British Honduras	—	—	2	2	—	—	3	4	—	—	—	—	5	6	
British Virgin Islands	—	—	1	1	—	—	—	—	2	—	—	—	1	3	
Colombia	—	—	—	—	—	—	6	6	—	—	—	—	6	6	
Dominica	—	—	—	—	—	—	1	1	—	—	—	—	1	1	
Dominican Republic	—	—	5	5	—	—	12	12	—	—	—	—	17	17	
England	2	2	4	5	2	2	2	2	2	2	—	—	12	13	
France	—	—	—	—	—	—	1	1	—	—	1	1	2	2	
Germany, Federal Republic of	2	2	1	1	—	—	—	—	—	—	—	—	3	3	
Grand Cayman	—	1	1	1	1	1	1	1	—	—	—	—	3	4	
Greece	—	—	2	2	—	—	—	—	—	—	—	—	2	2	
Grenada	—	—	1	1	1	1	2	2	—	—	—	—	4	4	
Guadeloupe	—	—	—	—	—	—	1	1	—	—	—	—	1	1	
Guyana	—	—	1	1	—	—	6	7	—	—	—	—	7	8	
Haiti	—	—	—	1	—	—	1	1	—	—	—	—	1	2	
Ireland	—	—	1	1	—	—	—	—	—	—	—	—	1	1	
Jamaica	—	—	—	—	10	10	13	—	—	—	—	—	23	10	
Lebanon	—	—	1	1	—	—	2	2	—	—	—	—	3	3	
Martinique	—	—	—	—	—	—	1	1	—	—	—	—	1	1	
Montserrat	—	—	—	—	—	—	1	1	—	—	—	—	1	1	
Netherlands	—	—	1	1	—	—	—	—	—	—	—	—	1	1	
Northern Ireland	—	—	1	1	—	—	—	—	—	—	—	—	1	1	
Puerto Rico	—	—	4	4	—	—	6	6	—	—	—	—	10	10	
St. Kitts	—	—	—	—	—	—	1	1	—	—	—	—	1	1	
St. Lucia	—	—	2	2	1	1	1	2	—	—	—	—	4	5	
St. Martin	—	—	—	1	—	—	—	—	—	—	—	—	—	1	1
St. Vincent	—	—	—	—	1	1	1	1	—	—	—	—	2	2	
Scotland	—	—	2	2	—	—	—	—	—	—	—	—	2	2	
Trinidad and Tobago	—	—	14	14	5	10	12	13	—	—	—	—	31	37	
United States	5	5	2	2	20	23	1	1	2	—	—	—	30	31	
United States Virgin Islands	—	—	5	5	—	—	1	1	—	—	—	—	6	6	
Total	9	10	64	69	49	57	94	85	4	4	1	1	221	226	

¹ Figures exclude sub-agencies operating outside Canada (54 in 1971 and 45 in 1972).

19.16 Cheques cashed at 50 clearing centres, 1970 and 1971 (thousand dollars)

Clearing centre	1970	1971	Clearing centre	1970	1971
ATLANTIC PROVINCES					
Charlottetown	827,012	871,711	London	10,272,665	11,671,346
Fredericton	1,737,950	2,133,065	Niagara Falls	1,107,274	1,111,849
Glace Bay	141,603	143,868	Oshawa	5,746,732	8,651,600
Halifax	8,757,516	9,472,273	Ottawa	15,386,126	18,309,177
Moncton	1,621,304	1,851,592	Peterborough	1,266,631	1,339,532
Saint John	2,484,568	2,903,291	St. Catharines	2,262,528	2,524,045
St. John's	6,217,484	6,150,676	Sarnia	1,538,798	1,651,158
Sydney	952,370	1,026,198	Sault Ste. Marie	2,440,059	3,139,508
QUEBEC	215,068,885	245,914,499	Sudbury	1,937,429	2,239,210
Chicoutimi	933,179	992,558	Thunder Bay	1,888,555	2,359,606
Drummondville	837,332	1,195,765	Timmins	447,868	499,787
Granby	791,475	1,148,177	Toronto	336,567,159	387,036,643
Montreal	187,895,615	214,145,942	Windsor	7,155,279	7,809,971
Quebec	19,607,462	22,764,861	PRAIRIE PROVINCES		
St. Hyacinthe	981,207	1,320,217	Brandon	546,946	610,258
Shawinigan Falls	355,883	344,938	Calgary	28,896,068	29,754,338
Sherbrooke	1,785,224	2,194,477	Edmonton	21,106,965	21,845,007
Trois-Rivières	1,530,056	1,399,695	Lethbridge	1,233,107	1,353,101
Valleyfield	351,452	407,869	Medicine Hat	472,695	537,756
ONTARIO	414,779,688	478,184,724	Moose Jaw	419,306	455,166
Brantford	1,785,387	1,734,427	Prince Albert	489,757	541,733
Chatham	1,560,325	2,429,682	Regina	12,309,253	12,463,808
Cornwall	999,264	1,093,852	Saskatoon	3,084,537	3,196,743
Guelph	1,199,477	1,344,384	Winnipeg	39,350,014	42,555,999
Hamilton	15,484,281	16,928,597	BRITISH COLUMBIA		
Kingston	1,496,145	1,683,604	Vancouver ¹	57,413,455	64,994,234
Kitchener	4,237,706	4,626,746	Victoria	50,153,771	56,335,442
			Total	7,259,684	8,658,792
				817,910,483	926,960,040

¹ Includes New Westminster.

19.17 Credit unions in Canada, 1965-71

Year	Credit unions chartered	Credit unions reporting	Members ¹	Assets ¹ \$'000	Loans granted to members \$'000
1965	4,939	4,364	3,677,291	2,541,791	1,078,139
1966 ²	4,934	4,415	3,859,677	2,926,134	1,226,541
1967	4,911	4,404	4,280,908	3,367,732	1,323,076
1968	4,861	4,373	4,632,382	3,699,840	1,482,003
1969	4,769	4,485	5,002,722	4,064,065	1,525,655
1970	4,593	4,411	5,203,402	4,591,953	1,781,331
1971	4,441	3,972	5,623,994	5,587,728	1,828,888

¹ Reporting organizations only.² Northwest Territories included from 1966.

19.18 Summary statistics of credit unions, by province, 1971

Province or territory	Credit unions chartered	Credit unions reporting	Members	Assets \$'000	Shares \$'000	Deposits \$'000	Loans granted to members \$'000
Newfoundland	58	21	5,370	2,480	1,854	297	1,906
Prince Edward Island	16	16	12,633	7,183	3,187	1,303	4,106
Nova Scotia	142	140	103,835	55,777	36,734	11,498	..
New Brunswick	150	150	110,358	53,011	39,978	6,113	23,823
Quebec	1,692	1,644	3,233,312	3,045,865	308,696	2,536,674	686,582
Ontario	1,462	1,088	1,071,122	1,059,284	576,554	395,864	692,453
Manitoba	204	204	202,124	225,405	992	206,349	117,048
Saskatchewan	261	259	336,194	478,819	209,022	232,061	192,988
Alberta	240	235	177,172	181,698	78,280	83,906	109,982
British Columbia	214	213	371,854	478,162	159,380	269,956	..
Northwest Territories	2	2	..	44	38	..	..
Total	4,441	3,972	5,623,994	5,587,728	1,414,715	3,744,021	1,828,888

19.19 Assets, liabilities and members' equity of local credit unions in Canada, 1970 and 1971 (million dollars)

Item	1970	1971	Item	1970	1971
Assets			Fixed assets		
Cash and demand deposits			Land and buildings	111	118
On hand	66	71	Equipment and furniture	26	37
In banks	40	47	Other assets	42	49
In centrals	415	516	Total, assets	4,592	5,587
Other	22	36			
Investments			Liabilities		
Term deposits	168	232	Accounts payable		
Government of Canada	43	60	Interest	6	9
Provincial governments	122	158	Dividends	2	3
Municipal governments	357	503	Other	11	22
Shares in centrals	49	54	Loans payable		
Religious institutions	29	33	Centrals	84	71
Hospitals	17	21	Banks	5	7
Other	77	99	Other	9	5
Loans			Deposits		
Cash loans			Ordinary	2,269	2,530
Personal	1,492	1,684	Term	657	1,214
Farm	96	96	Other liabilities	4	4
Co-operatives and other enterprises	30	29			
Other	56	55	Members' equity		
Mortgage loans			Share capital	1,267	1,415
Dwellings	1,185	1,495	Reserves	207	228
Farm	82	110	Undivided earnings	71	79
Co-operatives and other enterprises	36	48	Total, liabilities and members' equity	4,592	5,587
Other	31	36			

19.20 Assets, liabilities and shareholders' equity of trust companies (company and guaranteed funds), 1970 and 1971 (million dollars)

Item	1970	1971	Item	1970	1971
Assets			Assets (concluded)		
Demand deposits, incl. cash and foreign currency	327	257	Mortgages		
Investments			Loans under NHA	723	924
Investments in Canadian securities			Conventional mortgage loans	3,106	3,556
Federal	539	526	Investments in Canadian preferred and common shares	108	120
Provincial	315	380	Investments in foreign securities	29	26
Municipal	100	104	Investments in subsidiary and affiliated companies	50	67
Sales finance and commercial paper	380	440	Interest, rents and other receivables	63	73
Term deposits with chartered banks	191	263	Real estate and equipment	57	60
Term deposits with trust and mortgage companies	15	36	Other assets	57	53
Corporation bonds and debentures	335	398	Total, assets	6,564	7,470
Collateral loans	169	187			

19.20 Assets, liabilities and shareholders' equity of trust companies (company and guaranteed funds), 1970 and 1971 (million dollars) (concluded)

Item	1970	1971	Item	1970	1971
Liabilities			Liabilities (concluded)		
Demand and savings deposits			Interest, dividends, taxes and other payables	128	157
Chequing	404	455	Shareholders' equity		
Non-chequing	1,068	1,229	Capital paid up	126	134
Term deposits			Investment reserves	94	68
Under one year	960	1,000	Reserve fund	202	249
One to six years	3,453	4,104	Retained earnings	17	24
Over six years	29	23	Total, liabilities and shareholders' equity	6,564	7,470
Bank loans	8	12			
Short-term loans and notes payable	16	5			
Debts owing parent and affiliated companies	59	10			

19.21 Assets, liabilities and shareholders' equity of mortgage companies, 1970 and 1971 (million dollars)

Item	1970	1971	Item	1970	1971
Assets			Liabilities		
Demand deposits, incl. cash and foreign currency	45	43	Demand and savings deposits		
Investments			Chequing	150	159
Investments in Canadian securities			Non-chequing	333	387
Federal	121	164	Term deposits		
Provincial	48	70	Under one year	34	63
Municipal	8	8	One to six years	1,644	1,860
Sales finance and commercial paper	48	61	Over six years	629	681
Term deposits with chartered banks	27	51	Bank loans	30	83
Term deposits with trust and mortgage companies	3	4	Short-term loans and notes payable	181	96
Corporation bonds and debentures	34	51	Debts owing parent and affiliated companies	174	166
Collateral loans	32	34	Interest, dividends, taxes, and other payables	125	162
Mortgages			Shareholders' equity		
Loans under NHA	330	405	Capital paid up	244	253
Conventional mortgage loans	2,538	2,747	Investment reserves	45	34
Investments in Canadian preferred and common shares	70	79	Reserve fund	127	151
Investments in foreign securities	9	9	Retained earnings	62	64
Investments in subsidiary and affiliated companies	350	295	Total, liabilities and shareholders' equity	3,778	4,159
Interest, rents and other receivables	32	40			
Real estate and equipment	53	56			
Other assets	30	42			
Total, assets	3,778	4,159			

19.22 Revenues and expenses of trust and mortgage companies, 1970 and 1971 (million dollars)

Item	Trust companies		Mortgage companies	
	1970	1971	1970	1971
Revenues				
Interest earned	480	539	260	297
Dividends	6	6	25	15
Fees and commissions	120	144	—	2
Other revenues	9	11	23	27
Total, revenues	615	700	308	341
Expenses				
Interest	395	416	186	216
Depreciation	4	4	2	2
Amortization	—	—	1	1
Income taxes	22	41	17	24
Other expenses	166	192	59	59
Total, expenses	587	653	265	302
Net profit	28	47	43	39

19.23 Assets and liabilities of small loans companies and money-lenders, 1970 and 1971 (thousand dollars)

Assets and liabilities	1970	1971
Assets		
Small loans balances	524,817	439,644
Balances, large loans and other contracts	871,483	881,714
Cash	11,539	17,741
Other	45,152	28,457
Total, assets	1,452,991	1,367,556

19.23 Assets and liabilities of small loans companies and money-lenders, 1970 and 1971 (thousand dollars) (concluded)

Assets and liabilities	1970	1971
Liabilities		
Borrowed money	1,040,475	912,238
Unearned charges on large loans and other contracts	149,466	179,732
Reserves for losses	36,130	39,553
Paid-up capital	46,879	66,412
Surplus paid in by shareholders	26,835	21,312
Earned surplus	114,542	113,533
Other	38,664	34,776
Total, liabilities	1,452,991	1,367,556

19.24 Price of the United States dollar in Canada, by month, 1965-72 (Canadian cents per US dollar)

Month	1965	1966	1967	1968	1969	1970	1971	1972
January	107.38	107.46	107.95	108.47	107.27	107.28	101.16	100.59
February	107.58	107.63	108.06	108.73	107.44	107.31	100.75	100.46
March	108.11	107.62	108.20	108.49	107.67	107.27	100.63	99.84
April	107.92	107.70	108.24	108.01	107.62	107.28	100.76	99.56
May	107.95	106.67	108.21	107.79	107.70	107.28	100.87	98.87
June	108.23	107.65	108.04	107.68	107.95	103.84	102.12	97.94
July	108.35	107.48	107.78	107.36	108.06	103.20	102.11	98.39
August	107.84	107.51	107.58	107.26	107.81	102.14	101.33	98.22
September	107.64	107.62	107.53	107.30	107.82	101.59	101.29	98.29
October	107.51	107.93	107.33	107.27	107.79	102.14	100.44	98.26
November	107.49	108.20	107.51	107.30	107.58	102.00	100.37	98.72
December	107.58	108.31	108.02	107.31	107.42	101.74	99.92	99.67
Annual average	107.80	107.73	107.87	107.75	107.68	104.40	100.98	99.05

Rates published by Bank of Canada. Noon average market rate for business days in period.

19.25 Canada's official international reserves and exchange fund account forward commitments, 1965-72 (million US dollars)

End of:	Convertible foreign currencies ¹		Special Drawing Rights ²	Gold	Reserve position in the IMF	Total	Forward contracts in US dollars ⁴
	US dollars	Other ²					
1965	1,519.9	12.8	—	1,150.8	353.4	3,036.9	-4.4
1966	1,195.4	12.4	—	1,045.6	448.5	2,701.9	-5.4
1967	1,255.2	13.4	—	1,014.9	433.4	2,716.9	16.8
1968	1,964.9	11.6	—	863.1	206.2	3,045.8	27.8
1969	1,743.6	12.3	—	872.3	478.1	3,106.3	7.8
1970	3,022.1	14.5	182.1	790.7	669.6	4,679.0	-6.4
1971	4,060.6	13.6	371.9	791.8	332.6	5,570.4	-4.0
1972	4,355.0	12.6	505.2	834.1	342.9	6,049.9	-2.5

¹ Convertible foreign currency holdings of the Exchange Fund Account, the Receiver General for Canada and the Bank of Canada.

² Valued at official parity rates in terms of US dollars.

³ Holdings of Special Drawing Rights (SDRs) reflect allocations to Canada of SDRs and transactions involving Canada under the arrangements by the International Monetary Fund providing for the use of SDRs by member countries.

⁴ Includes all overnight and forward transactions of the Exchange Fund Account and the Bank of Canada that affect the total of official reserves. A positive figure indicates a net commitment to take delivery of foreign exchange in the future and a negative figure indicates a commitment to deliver foreign exchange in the future.

19.26 Canadian bonds outstanding as at Dec. 31, 1966-71, and annual changes in bonds and in short-term paper outstanding (million dollars)

Item	1966	1967	1968	1969	1970	1971
Bonds outstanding Dec. 31						
Government of Canada	21,111	22,011	23,556	23,902	25,746	28,277
Provincial government	13,534	15,633	17,614	19,676	21,763	24,016
Municipal government	5,718	6,128	6,425	6,664	6,902	7,101
Corporate	11,422	12,292	13,060	13,935	15,507	16,982
Institutional	309	338	398	479	602	658
Total	52,094	56,402	61,053	64,656	70,520	77,034

Changes in bonds outstanding and in short-term paper¹

Bonds						
Government of Canada	430	900	1,545	346	1,844	2,531
Treasury bills	20	285	370	70	730	205
Marketable bonds	57	310	1,073	-165	461	272
Non-marketable bonds	353	305	102	441	653	2,054
Provincial government	1,588	2,099	1,981	2,062	2,087	2,253

19.26 Canadian bonds outstanding as at Dec. 31, 1966-71, and annual changes in bonds and in short-term paper outstanding (million dollars) (concluded)

Item	1966	1967	1968	1969	1970	1971
Municipal government	350	410	297	239	238	199
Corporate	1,004	870	768	875	1,572	1,475
Institutional	14	29	60	81	123	56
Total, bonds	3,386	4,308	4,651	3,603	5,864	6,514
Short-term paper						
Corporate						
Finance and other commercial paper	143	100	471	535	51	188
Canadian dollar bankers' acceptances	20	-24	-30	58	221	8
Total, short-term paper	163	76	441	593	272	196
Total, bonds and short-term paper	3,549	4,384	5,092	4,196	6,136	6,710

Federal, provincial and municipal bonds include direct and guaranteed issues; institutional bonds exclude bonds payable in Canadian dollars of the International Bank for Reconstruction and Development and certain foreign governments, amounting to \$102 million, \$119 million, \$133 million, \$115 million, \$105 million and \$128 million in the years 1966-71, respectively.

¹ Changes in bonds outstanding do not agree with Bank of Canada figures on net new issues due to takeovers, bankruptcies, etc.

19.27 Estimated distribution of bond holdings, as at Dec. 31, 1971

Holder	Government of Canada bonds \$'000,000	Provincial government bonds \$'000,000	Municipal government bonds \$'000,000	Corporate and other bonds \$'000,000	Total \$'000,000	% of total
Bank of Canada	4,866	—	—	458	5,324	6.9
Chartered banks	7,324	567	451	1,269	9,611	12.4
Government of Canada	569	4,444 ¹	—	—	5,013	6.5
Provincial governments	464	2,222	272	611	3,569	4.6
Municipal governments	65 ^D	183	793	63	1,104	1.4
Life insurance companies	487	1,231	629	3,254	5,601	7.3
Other insurance companies	549	743	259	770	2,321	3.0
Quebec savings banks	32	66	45	58	201	0.3
Trust and mortgage loan companies	690	449	112	449	1,700	2.2
Trusteed pension plans	424	3,324	749	1,878	6,375	8.3
All other resident	12,106 ²	4,164	2,239	2,863	21,372	27.7
Non-resident	701	6,623	1,552	6,095	14,971	19.4
All holders	28,277	24,016	7,101	17,768	77,162	100.0

Federal, provincial and municipal bonds include direct and guaranteed issues; "other" bonds include bonds of religious and other institutions, and a small amount of foreign bonds payable in Canadian dollars; short-term commercial borrowing is excluded.

¹ Held by the Canada Pension Plan Investment Fund.

² Includes Canada Savings Bonds of \$9,916 million.

19.28 Life insurance effected and in force in Canada by insurance companies under federal registration, 1880-1971 (million dollars)

Year	New insurance effected during year	Amounts in force Dec. 31			Total
		Canadian	British	Foreign	
1880	14	38	20	34	91
1900	68	267	39	124	431
1920	630	1,664	77	916	2,657
1940	590	4,609	146	2,221	6,975
1960	5,693	30,418	1,555	12,676	44,649
1965	8,967	47,900	3,071	18,685	69,656
1970	12,915	76,775	5,727	28,615	111,116
1971	15,940	84,946	6,319	30,626	121,891

19.29 Summary of the number of life insurance policies and related amounts in force in Canada reported by federally registered companies, 1970 and 1971

Policies	Number of policies '000		Amounts in force \$'000,000	
	1970	1971	1970	1971
New policies effected during year	689	678	12,915	15,940
Total policies in force Dec. 31	10,239	10,291	111,116	121,891
Policies ceased by death or maturity	129	131	491	528

19.30 Amounts of ordinary¹ and group life insurance policies effected and in force in Canada by federally registered companies, 1970 and 1971 (million dollars)

Policies	Canadian		British		Foreign	
	1970	1971	1970	1971	1970	1971
Effected during year						
Ordinary ¹	4,971	5,464	838	851	2,276	2,383
Group	3,300	5,337	131	342	1,401	1,562
In force Dec. 31						
Ordinary ¹	38,306	40,871	4,608	4,931	14,928	15,643
Group	38,469	44,075	1,119	1,388	13,687	14,983

¹ Includes industrial policies.

19.31 Life insurance premiums (direct written), by province, 1971 (million dollars)

Province or territory	Ordinary ¹	Group	Total
Newfoundland	10.5	4.0	14.5
Prince Edward Island	3.1	0.8	4.0
Nova Scotia	35.3	9.7	45.0
New Brunswick	24.9	6.7	31.6
Quebec	287.5	92.9	380.5
Ontario	470.0	146.7	616.7
Manitoba	41.7	12.7	54.4
Saskatchewan	30.7	10.7	41.4
Alberta	72.0	21.0	93.1
British Columbia	99.9	32.0	131.9
Yukon Territory and Northwest Territories	1.4	0.4	1.9
Miscellaneous	16.4	1.6	18.0
Total	1,093.5	339.4	1,432.9

¹ Includes industrial policies.

19.32 Major assets and liabilities of federally registered life insurance companies as at Dec. 31, 1970 and 1971 (million dollars)

Assets and liabilities	Canadian ¹		British ²		Foreign ³	
	1970	1971	1970	1971	1970	1971
Assets						
Bonds	5,421	5,804	395	456	1,109	1,199
Stocks	1,232	1,364	198	233	4	3
Mortgages	6,341	6,416	410	413	1,118	1,153
Real estate	667	775	27	33	17	57
Policy loans	1,105	1,149	42	45	142	148
Other assets	630	680	75 ⁴	94 ³	91 ³	100 ³
Segregated	567	891	34	63	7	11
Total	15,963	17,079	1,181	1,337	2,488	2,671
Liabilities						
Actuarial reserves	11,824	12,543	1,021	1,086	2,013	2,124
Outstanding claims	184	182	8	8	37	41
Amounts on deposit	1,130	1,100	5	4	101	105
Other liabilities	1,130	1,193	26	37	131	138
Segregated	561	883	35	63	7	11
Total	14,829	15,901	1,095	1,198	2,289	2,419
Surplus or excess ⁴	1,105	1,144	86	139	199	252
Capital stock	29	34	...	...	...	...

¹ Assets at book values, in and out of Canada (segregated funds at market values).

² Assets at market values, in Canada only.

³ Includes assets under control of Chief Agent in Canada.

⁴ Excess of assets over liabilities in Canada for British and foreign companies; for such companies, "capital stock" is not applicable in Canada.

19.33 Major items of income and expenditure of federally registered life insurance companies, 1971 (million dollars)

Income and expenditure	Canadian ¹	British ²	Foreign ²
Income			
Insurance premiums and annuity considerations	2,178	160	408
Investment income			
Regular funds	964	84	167
Segregated funds	91	2	1
Other items	51	6	25
Total income	3,284	252	601
Selected expenditure			
Claims incurred	1,129	76	219
Dividends to policyholders	268	17	72
Commissions and general expenses	507	39	99
Taxes, licences and fees	96	5	49

¹ World-wide business.

² Business in Canada only.

19.34 Fire and casualty net premiums written and net claims incurred, by class of insurance and by incorporation of company, 1971 (million dollars)

Insurance class	Net premiums written				Net claims incurred
	Canadian	British	Foreign	Total	
Property ¹	219	96	216	531	304
Automobile	461	146	289	897	619
Liability	46	18	31	94	58
Accident and sickness	199	6	199	403	314
Other casualty ²	28	15	44	88	29
Marine	4	8	12	24	12
Total	957	289	791	2,037	1,336

¹ Includes fire, personal property, real property, windstorm, earthquake, inland transportation, livestock, theft, forgery, plate glass.

² Includes hail, fidelity, surety, boiler and machinery, aircraft, credit, title, mortgage.

19.35 Fire and casualty direct premiums written and claims incurred, by province and by category of company, 1971 (million dollars)

Province or territory	Premiums written				Claims incurred
	Companies federally registered	Companies provincially licensed	Lloyd's	Total	
Newfoundland	29	2	3	33	19
Prince Edward Island	7	1	1	8	5
Nova Scotia	61	1	1	62	41
New Brunswick	54	1	1	55	37
Quebec	581	145	33	760	482
Ontario	820	105	15	940	627
Manitoba	66	3	2	71	51
Saskatchewan	28	19	1	48	30
Alberta	149	19	7	175	103
British Columbia	249	11	14	273	183
Yukon Territory and Northwest Territories	10	1	1	10	6
Total	2,054	305	75	2,435	1,582

¹ Less than \$500,000.

19.36 Major assets and liabilities of federally registered fire and casualty insurance companies, 1970 and 1971 (million dollars)

Assets and liabilities	Canadian ¹		British ²		Foreign ²	
	1970	1971	1970	1971	1970	1971
Assets						
Bonds	779	836	306	347	820	988
Stocks	298	351	72	85	49	54
Amounts due from agents and uncollected premiums	138	143	47	47	84	89
Other	194	302	53	55	133	139
Total	1,409	1,632	478	534	1,086	1,270
Liabilities						
Unearned premiums	350	391	128	130	313	330
Unpaid claims	473	565	156	165	366	432
Other	211	236	23	19	96	107
Total	1,034	1,192	307	314	775	869
Surplus or excess ³	289	342	171	220	311	401
Capital stock and amounts transferred	86	98	...	...	...	...

¹ Business in and out of Canada, investments on book value basis. Deduction, if any, for excess of market over book value in "Other" assets.

² Business in Canada only, investments on market value basis.

³ Excess of assets over liabilities in Canada for British and foreign companies; for such companies, "Capital stock" is not applicable in Canada.

19.37 Fire and casualty insurance, underwriting results in Canada, 1972 (million dollars)

Registered companies	Underwriting income earned	Claims ¹ incurred	Expenses incurred	Dividends to policyholders	Underwriting gain
Canadian²					
Fire and casualty	824.4	566.0	292.6	1.6	-35.8
A and S branches ³	228.9	189.8	40.8	12.6	-14.3
British	304.5	199.1	109.0	—	-3.6
Foreign					
Fire and casualty	642.9	426.5	217.0	2.7	-3.3
A and S branches ³	165.4	128.1	35.6	6.5	-4.8

19.37 Fire and casualty insurance, underwriting results in Canada, 1972 (million dollars) (concluded)

Registered companies	Underwriting income earned	Claims ¹ incurred	Expenses incurred	Dividends to policyholders	Underwriting gain
Total, 1972	2,166.1	1,509.5	695.0	23.4	-61.8
1971	1,953.6	1,326.7	645.6	15.2	-33.9
1970	1,777.4	1,151.0	625.6	16.8	-16.0
1969	1,673.7	1,139.3	582.5	12.9	-61.0
1968	1,534.2	966.4	520.0	10.9	36.9

¹ Includes adjustment expenses.² Excludes transactions out of Canada.³ Accident and sickness branches of life insurance companies.**19.38 Fire losses¹, by province, 1969-71**

Province or territory	Property loss		1971 Fires reported	1971 Property loss \$'000	Loss per capita \$
	1969 \$'000	1970 \$'000			
Newfoundland	2,110	1,731	664	3,613	6.89
Prince Edward Island	1,208	909	468	1,249	11.25
Nova Scotia	5,791	5,103	1,986	6,291	8.17
New Brunswick	4,153	4,434	1,164	6,263	9.90
Quebec	54,088	59,561	24,334	68,833	11.41
Ontario	66,120	67,912	23,435	82,037	10.50
Manitoba	7,103	7,990	3,457	9,928	10.05
Saskatchewan	6,823	4,679	2,066	5,852	5.08
Alberta	18,233	15,648	7,422	15,699	9.61
British Columbia	27,514	34,561	7,473	34,717	15.81
Yukon Territory and Northwest Territories	3,958	1,668	260	1,596	30.11
Canada	197,102	204,194	72,729	236,077	10.89

¹ Excludes forest fires.**19.39 Fire losses¹, by type of property and cause of fire, 1970 and 1971**

Type of property and reported cause of fire	1970		1971	
	Fires reported	Property loss \$'000	Fires reported	Property loss \$'000
Type of property				
Residential	45,634	61,014	51,133	76,358
Mercantile	3,199	37,219	3,614	41,377
Farm	7,023	22,353	4,970	21,277
Manufacturing	1,466	25,288	1,710	31,101
Institutional and assembly	1,828	17,433	2,128	23,987
Miscellaneous	8,569	40,888	9,174	41,977
Total	67,719	204,194	72,729	236,077
Reported cause				
Smokers' carelessness	19,407	13,193	21,592	13,458
Stoves, furnaces, boilers and smoke pipes	4,274	13,335	8,304	20,881
Electrical wiring and appliances	9,800	29,103	10,955	41,697
Matches	1,183	2,174	1,298	2,369
Defective and overheated chimneys and flues	867	1,693	788	1,972
Hot ashes, coals and open fires	3,156	13,341	3,620	15,355
Petroleum and its products	1,532	6,893	2,699	6,924
Lights, other than electric	793	1,221	548	1,319
Lightning	2,575	2,649	2,472	2,866
Sparks on roofs	89	267	134	256
Exposure fires	801	4,691	1,658	7,154
Spontaneous ignition	267	2,636	676	3,209
Incendiarism	2,211	14,852	2,915	19,408
Miscellaneous known causes (explosions, fireworks, friction, hot grease or metal, steam or hot water pipes, etc.)	8,141	18,202	8,450	34,644
Unknown	12,623	79,944	6,620	64,564

¹ Excludes forest fires.**Sources**

- 19.1 - 19.5 Banking and Financial Analysis Department, Bank of Canada.
 19.6 - 19.7 Royal Canadian Mint.
 19.8 - 19.12 Banking and Financial Analysis Department, Bank of Canada.
 19.13 - 19.15 The Canadian Bankers' Association.
 19.16 - 19.22 Business Statistics Division, General Statistics Branch, Statistics Canada.
 19.23 Special Services Division, Department of Insurance.
 19.24 - 19.25 Banking and Financial Analysis Department, Bank of Canada.
 19.26 *Bank of Canada Review*, Aug. 1972 and Jan. 1973.
 19.27 *Bank of Canada Review*, Jan. 1973.
 19.28 - 19.37 Special Services Division, Department of Insurance.
 19.38 - 19.39 Dominion Fire Commissioner, Department of Public Works.

Chapter 20

Government finance

20.1 Consolidated finance statistics

Details of consolidated government revenue by source, and consolidated government expenditure by function for the years 1965-69 are presented in Table 20.1. The consolidation reflects the relationship between government at all levels and the public in respect of revenue raised and services provided. The consolidated gross general figures were arrived at by eliminating from the gross general revenue sources and the gross general expenditure functions of each level of government, all general purpose transfers such as the federal statutory subsidies and equalization payments to the provinces, and all specific purpose transfers such as the federal contributions to provincial hospitalization and medical care programs. Both gross revenues and expenditures continued to increase over the period but after a peak deficit in 1967 the differential continued to decline through 1968 to reach a figure of -\$43.5 million in 1969.

20.2 Federal government finance

20.2.1 General accounts

Tables 20.2 to 20.6 present financial statistics of the federal government prepared in accordance with the revised financial management concepts as published in the Statistics Canada publication *The Canadian system of government financial management statistics* (Catalogue No. 68-506). Financial statistics in Tables 20.7 and 20.8 are extracted directly from the *Public accounts of Canada*.

Tables 20.2 and 20.3 give details of gross general revenue and expenditure for the years ended March 31, 1970 and 1971. Revenue increased from \$15,825 million to \$16,642 million while expenditures rose from \$13,767 million to \$15,728 million.

Transfers from the federal government to provincial governments, territories and local governments for the year ended March 31, 1971 are shown in Table 20.4. Comparable figures for the previous year are available in the *1972 Canada Year Book* pp. 1139-1142.

Table 20.5 provides details of the assets and liabilities of the federal government as at March 31, 1970 and 1971. Table 20.6 provides an analysis of the gross bonded debt according to average interest rate, average term of issue and place of payment as at March 31, 1970-72.

In addition to the direct gross bonded debt, the Government of Canada has assumed certain contingent liabilities. The major categories of this indirect or contingent debt are the guarantee of insured loans under the National Housing Act and the guaranteed bonds and debentures of the Canadian National Railways. The remainder consists chiefly of guarantees of loans made by chartered banks to the Canadian Wheat Board, to farmers and to university students and of guarantees under the Export Development Act. Table 20.7 provides detail of the guaranteed debt of the Government of Canada as at March 31, 1972.

Table 20.8 summarizes the public debt position during the period 1968-72 as to interest and amount outstanding. Details of unmatured debt and treasury bills outstanding and information on new security issues of the federal government may be found in the *Public accounts of Canada*. They are summarized by standard classification in Statistics Canada publication *Federal government finance* (Catalogue No. 68-211).

20.2.2 Individual and corporation taxes

Statistics of income tax collections are gathered at the time the payments are made and are therefore up to date. Over 85% of individual taxpayers are wage or salary earners who have almost the whole of their tax liability deducted at the source by their employers. All other taxpayers are required to pay most of their estimated tax during the taxation year. Thus, the greater part of the tax is collected during the same year in which the related income is earned and only a limited residue remains to be collected when the returns are filed. The collections for a given fiscal year include employer remittances of tax deductions, Canada Pension Plan contributions, unemployment insurance premiums and instalments, embracing portions of two or more taxation years, and year-end payments; they cannot therefore be closely related to the statistics for a given taxation year. As little information about a taxpayer is received when

the payment is made and as a single cheque from one employer may frequently cover the tax payment of hundreds of employees, the payments cannot be statistically related to taxpayers by occupation or income. Descriptive classifications of taxpayers are available only from tax returns but collection statistics, if interpreted with the current tax structure and the above factors in mind, indicate the trend of income in advance of the final compilation of statistics. The statistics given in Table 20.9 pertain to revenue collections by the Department of National Revenue, Taxation. The collections are for fiscal years ended March 31.

Individual income tax statistics collected by Statistics Canada are presented in Tables 20.10 - 20.12 on a calendar-year basis and are compiled from a sample of all returns received. Taxpayers and amounts of income and tax are shown for selected cities and by occupational class and income classes.

Table 20.13 gives statistics of corporation positive income tax by industry group by size of assets for 1968-70. Federal and provincial income taxes payable by corporations by industrial division are summarized in Table 20.14.

20.2.3 Estate taxes

From January 1, 1947 to March 31, 1963, only Ontario and Quebec levied succession duties, the other provinces having leased this field to the federal government under the terms of the federal-provincial tax agreements. However, British Columbia re-entered the field, effective for all deaths occurring on or after April 1, 1963. The incidence of the estate tax since that time is described in Section 20.6. Federal revenue from succession duties and estate taxes in the year ended March 31, 1972 amounted to \$132.0 million. In the same year, provincial revenues from succession duties in Quebec, Ontario and British Columbia were \$48.0 million, \$81.3 million and \$28.7 million, respectively.

20.2.4 Excise taxes

Excise taxes collected by the Excise Division of the Department of National Revenue are given for the years ended March 31, 1970-72 in Table 20.15.

Excise duties. Gross excise duties collected for the year ended March 31, 1972 were: spirits \$235.2 million; beer or malt liquor \$160.6 million; tobacco, cigarettes and cigars \$221.4 million; licences \$35,271; for a total of \$617.3 million. A drawback of 99% of the duty may be granted when domestic spirits, testing not less than 50% over proof, are delivered in limited quantities for medicinal or research purposes to universities, scientific or research laboratories, public hospitals or health institutions in receipt of federal and provincial government aid.

20.3 Federal-provincial programs

Federal expenditures on joint federal-provincial programs, which, beginning in 1969-70, experienced a startling rate of increase, continued to increase during the fiscal year April 1, 1971 to March 31, 1972. These programs take three forms: the federal government contributes financial assistance to a program administered by a province; the federal and provincial governments each assumes the sole responsibility for the construction, administration and financing of separate aspects of a joint project; or the province contributes financially to a joint program administered by the federal government.

The first category of joint programs is by far the most common and such programs are commonly called conditional grant programs. They are characterized by the federal government agreeing to make money available to a province on certain conditions, such conditions always specifying the field, service or project to which the money must be applied. In addition to administering the programs, the provinces may be required to make financial contributions to them to provide certain facilities and to meet certain specified standards of operation. Various programs in the field of social policy are conditional grant programs. For instance, the federal government undertakes to contribute to participating provinces a specified share of the costs incurred by the provinces in respect of public hospital insurance programs. The federal contribution in each province is equal to 25% of the average per capita cost of in-patient services in Canada as a whole plus 25% of the average per capita cost of in-patient services in the province multiplied by the average for the year of the number of insured persons in the province.

Although the hospital insurance program, with its specifications of eligible hospitals, sharable costs and the amount of the federal contribution, is characteristic of many conditional

grant programs there are others in which the conditions are nominal. For example, under the Canada Assistance Plan the federal government undertakes to share one half of the cost of welfare paid to recipients in need, the scale and conditions of the assistance to be determined by the provinces. In general, it may be said that the hospital insurance program conforms to the traditional pattern of conditional grants, whereas the Canada Assistance Plan marks an approach in which flexibility and adaptability to local circumstances are allowed to modify insistence on a national uniform standard.

Joint programs in the second category — those in which the federal and provincial governments accept sole responsibility for portions of a total project — are not numerous and are generally of a public works nature. The irrigation projects carried out jointly by the Prairie Farm Rehabilitation Administration and the province of Alberta on the St. Mary's and Bow rivers in southern Alberta were of this nature.

Joint programs in the third category are also few in number and the sums of money involved are seldom large. The South Saskatchewan River dam was an example; Canada undertook to pay the costs of the dam in the first instance, with Saskatchewan subsequently reimbursing Canada for one quarter of the federal expenditures (up to a maximum of \$25 million) on the dam and reservoir. By March 31, 1968, the full amount had been recovered from Saskatchewan.

The federal transfers to the provinces in respect of the conditional grant and shared-cost programs increased from \$75 million in the year ended March 31, 1954, to \$3,099.6 million in 1971-72. The increase was attributable largely to the introduction of the hospital insurance and diagnostic services program in 1958, medicare in 1968, increases in the level of assistance, and the integration of welfare programs under the Canada Assistance Plan. In 1971-72, federal contributions to the programs in respect of hospital and diagnostic services, medicare, and welfare programs integrated with and into the Canada Assistance Plan amounted to \$1,216.4 million, \$575.5 million and \$735.3 million, respectively. Further details are given in Table 20.16.

The increasing number and extent of conditional grant and shared-cost programs has occasioned some provincial criticisms and misgivings. It has been argued that the preponderant occupancy of the direct tax field in the postwar years by the federal government encouraged the growth of such programs, as the provinces were denied the revenues that would have enabled them to provide equivalent programs themselves. At the 1964 Federal-Provincial Conference, Quebec proposed that a province be given the option to assume full administrative and financial responsibility for certain joint programs upon the federal government making available to that province the necessary additional tax room. These proposals were referred to a federal-provincial committee of officials for consideration. As a consequence of their consideration, the Prime Minister of Canada, in a letter to the provincial Premiers dated August 15, 1964, proposed a temporary measure permitting a province for an interim period to assume full financial and administrative responsibility in respect of certain programs pending the development of more permanent arrangements. Parliament approved the necessary legislation — the Established Programs (Interim Arrangements) Act — in April 1965. Under the Act, the Government of Canada was authorized to enter into agreements with any province that wished to assume full financial and administrative responsibility for certain programs in return for fiscal compensation. The nature and number of programs were itemized in the schedules to the Act.

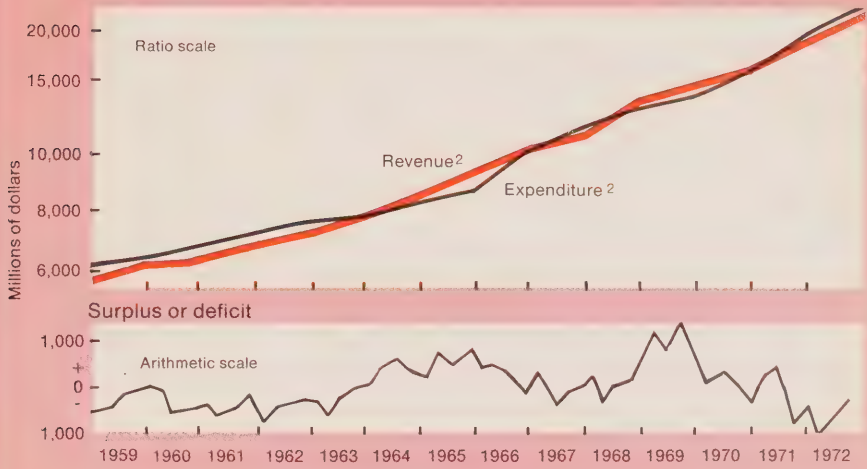
Schedule I listed the major conditional grant programs of a continuing nature and Schedule II listed smaller and more transient programs. The Schedule I programs were: hospital insurance; old age assistance, blind persons' allowances, disabled persons' allowances, and the welfare portion of unemployment assistance; the technical and vocational training programs for youths who were not yet members of the labour force; and the health grant program, except those elements that involved research and demonstration. The Schedule II programs were: agricultural lime assistance; forestry programs; hospital construction grants; campgrounds and picnic areas; and the roads-to-resources program. The Act was subsequently amended to include the Canada Assistance Plan.

If a province wished to avail itself of the provisions of the Established Programs (Interim Arrangements) Act in respect of a Schedule I program, it had to enter into a supplemental agreement in which it undertook to assume full responsibility for the administration and financing of the program. The federal government undertook to ensure that the province

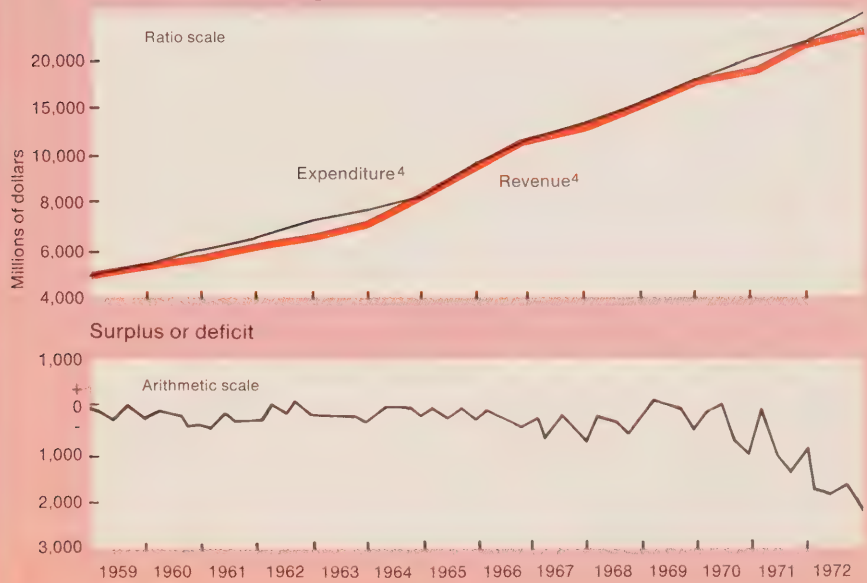
Government sector revenue and expenditure by level of government

National income and expenditure accounts basis
(Quarterly, seasonally adjusted at annual rates)

Federal government¹



Provincial — Municipal governments³



1. Excludes Canada Pension Plan and Quebec Pension Plan.
2. Includes transfers to other levels
3. Includes hospitals.
4. Excludes all intergovernmental transfers except federal to provincial and municipal

received revenue equivalent to the fiscal burden it assumed. The federal government undertook to: abate by a specified percentage the individual income tax on the income of residents of the province; pay associated equalization; and make an operating cost adjustment. The operating cost adjustment payment or recovery was to ensure that a province did not suffer or benefit financially through assuming the financing of the federal share of the former joint program. Because of their smaller size and lack of continuity, the compensation associated with a Schedule II program did not provide for federal tax abatement or associated equalization payments. Compensation for these programs was to be paid directly to the province by the federal Minister of Finance.

The freedom of a province to vary the nature and condition of a program enumerated in the Established Programs (Interim Arrangements) Act differed between the Schedule I and Schedule II programs. Under the Act, a supplemental agreement with respect to a Schedule I program could vary the conditions of the original agreement only as to the manner in which Canada would contribute to the program and the manner in which accounts were submitted. A supplemental agreement for a Schedule II program might require the program to be continued as in the original authority or it might allow a province to substitute a provincial program having substantially similar objectives.

The Established Programs (Interim Arrangements) Act was designed to provide for an interim period during which a province might assume greater administrative and financial responsibility for the enumerated programs and during which time more permanent arrangements governing joint programs might be devised. The length of the interim period was set out in the Act for each program and varied from March 31, 1967 to December 31, 1970. The tax abatement associated with Schedule I programs was also set out in the Act and varied from 1% for the health grant program to 14% for hospital insurance.

Quebec alone availed itself of the provisions of the above legislation. At the federal-provincial meetings in September and October 1966, the federal government offered the provinces revised and more permanent arrangements. The federal government proposed to abate, for the period 1967-70, 17% of the personal income tax in those provinces that would take over the financial responsibility for the hospital insurance, special welfare (i.e., Canada Assistance Plan) and health grant programs. To ensure fiscal equity, equalization and operating cost adjustment payments were to be associated with the abatement. As the technical and vocational program was being discontinued in its existing form, the offer did not apply to that program. These proposals were offered again at the November 4-5, 1968 meeting of the Ministers of Finance and Provincial Treasurers. No province took up the offer. As a consequence, the length of the interim period of the Established Programs (Interim Arrangements) Act for the hospital insurance and special welfare program was extended in 1972 to December 31, 1977 and March 31, 1977, respectively. The interim period for the health grants program was not extended beyond March 31, 1972 as this program was being phased out. Also tax abatement points associated with the hospital insurance program were raised in 1972 to 16 points and with the special welfare program to five points. The increase was occasioned by the reassignment of the one point associated with the defunct health grants program and conversion of the tax points under the pre-1972 Income Tax Act to points of the same approximate value when the latter was revised in 1972.

20.4 Provincial government finance

Provincial government accounting and reporting practices vary considerably so that adjustments to the provincial public accounts figures are required in order to produce comparable statistics. For example, financial data relating to specific functions are sometimes excluded from the ordinary or current accounts of certain provinces; therefore the transactions of special or administrative funds under which these functions are carried out must be consolidated with the provincial accounts to produce statistics comparable to those of the other provinces.

In 1971, Statistics Canada changed its presentation of the financial position of provincial and territorial governments. Data presented here are not comparable with data given in the 1972 *Canada Year Book* as new concepts of provincial indebtedness have been developed. Further information may be obtained from *Provincial government finance, assets, liabilities, and sources and uses of funds* (Catalogue No. 68-209).

Gross general revenue and expenditure for the year ended March 31, 1970 are given in Table 20.17. Liabilities of provincial and territorial governments and liabilities guaranteed by provincial governments replace the previous table on direct and indirect indebtedness and are presented in Tables 20.18 and 20.19. Bonds and debentures outstanding as at March 31, 1969 and 1970 are listed in Table 20.20.

20.5 Local government finance

Local government taxation. In 1969, the latest year for which complete data are available, local government revenue from taxation increased by 11% to \$3,300 million. The rate of collections (excluding Quebec for which data are not available) declined slightly from 99.1% to 98.5% but taxes receivable fell from 11.5% of taxation revenue to 11.2%. Collection rate declines in Newfoundland, Ontario, Saskatchewan and Alberta offset improvements in these rates in the other provinces and territories; conversely, higher percentages of taxes receivable in Nova Scotia, Ontario, Manitoba and Saskatchewan were more than offset by lower rates elsewhere.

Local government revenue, expenditure and debt. As in previous years, gross revenue and expenditure of local governments both increased significantly in 1969, gross revenue by 12.3% and gross expenditure by 10.7% compared with 1968 results. Increases in both categories over the previous year were recorded in all provinces and territories except Newfoundland where 1968 figures were distorted by a large private grant for sewer and water installation. Apart from Newfoundland, revenues and expenditures increased relatively over 1968 less than the national average in Prince Edward Island, New Brunswick, Quebec, Saskatchewan and Alberta. Details of 1969 financial data are given in Tables 20.21 - 20.23.

20.6 Tax rates

Taxes are imposed in Canada by the federal government, by provincial governments and by municipalities. The Government of Canada has the right to raise money "by any mode or system of taxation" while the provincial legislatures are restricted to "direct taxation within the province in order to the raising of a revenue for provincial purposes". Thus, the provinces have a right to use only the field of direct taxation and the federal government is not subject to any constitutional restriction in matters of taxation. Municipalities derive their incorporation with its associated powers, fiscal and otherwise, from the provincial government concerned and are thus also limited to direct taxation.

A direct tax is generally recognized as one "which is demanded from the very person who it is intended or desired should pay it". This concept has limited the provincial governments to the imposition of income tax, retail sales tax, succession duties and an assortment of other direct levies. In turn, municipalities, acting under provincial legislation, tax real estate, water consumption and places of business. The federal government levies taxes on income, excise taxes, excise and customs duties, and a sales tax.

Starting in 1941, a series of federal-provincial tax agreements were concluded to promote the orderly imposition of direct taxes. The duration of each agreement was normally five years. Under the earlier agreements, the participating provinces undertook — in return for compensation — not to use, or permit their municipalities to use, certain of the direct taxes. Under more recent arrangements, the federal personal and corporation income tax otherwise payable in all provinces and the estate tax otherwise payable in three provinces were abated by certain percentages to make room for provincial levies.

Federal tax reform amendments passed in 1971, which became effective for the most part from the beginning of 1972, included a new personal income tax rate structure which was not designed to be abated in the previous way. At the same time the federal estate tax was terminated. As a result, the arrangement under which federal taxes are abated has general application now only for the corporation income tax. All provinces impose taxes on the income of individuals and corporations and all but Alberta impose taxes on property passing at death. As part of the current fiscal arrangements, the federal government has entered into tax collection agreements under which it collects provincial personal income taxes for all provinces except Quebec, provincial corporation income taxes for all provinces except Ontario and Quebec, and provincial succession duties for all provinces except Quebec, Ontario and British Columbia.

20.6.1 Federal taxes

Individual income tax. Personal income taxation in Canada is imposed on the basis of residence. Every individual who is resident in Canada at any time during a year is liable for the payment of income tax on all his income. A non-resident is liable for tax only on income from sources in Canada. The term "residence", generally speaking, is the place where a person resides or where he maintains a dwelling ready at all times for his use. There are also statutory extensions of the meaning of "resident" to include a person who has sojourned in Canada for an aggregate period of 183 days in a taxation year, or a person who was during the year a member of the Armed Forces of Canada, or an officer or servant of Canada or of any one of its provinces, or the spouse or dependent child of any such person. The extended meaning of resident also includes employees who go from Canada to work under certain international development assistance programs.

The Canadian tax law uses the concepts "income" and "taxable income". The income of a resident of Canada for a taxation year comprises his revenues from all sources inside or outside Canada and includes income for the year from businesses, property, offices, and employments. Since January 1, 1972, it also includes one half of taxable capital gains.

In computing his income, an individual must include benefits from employment, fees, commissions, dividends, annuities, pension benefits, interest, alimony and maintenance payments. Also included are unemployment insurance benefits, scholarships in excess of \$500, benefits under a disability insurance plan to which his employer contributes and other miscellaneous items of income. On the other hand, war service disability pensions paid by Canada or a country that was an ally at the time of the war service, social assistance payments made on a needs-test basis under a prescribed program, compensation in respect of an injury or death paid under a Workmen's Compensation Act of a province and family income security payments do not have to be included in the computation of income.

An employee does not have to include in his income allowances paid to him by his employer to cover travelling expenses to a distant work site, or board and lodging while at the site. In order to qualify, the worker must travel away from his ordinary residence in which he supports his wife or other dependant, the work site must be temporary and the time away from his ordinary residence must be at least 36 hours.

Certain amounts are deductible in computing income. These include contributions to a registered employees' pension plan, premiums to a registered retirement savings plan, premiums under the unemployment insurance program, alimony payments and union dues. An employee may deduct 3% of his salary or wages (up to a maximum of \$150 per year) to cover expenses of earning his income. No receipts or details of actual expenditures are necessary to claim this deduction. Expenses of meals and lodging while away from home are deductible by employees who have to travel as they perform their work, such as employees who work on trains or who drive trucks. Where a mother has her children cared for in order that she may work, she may deduct this expense subject to certain limitations. A father may deduct child care expenses where he is the only parent of the family or where the mother is incapable of caring for the children. Expenses of moving to a new work location are deductible from income earned in the new location. These moving expenses may be deducted by salary or wage earners, self-employed persons and, in some instances, by students at post-secondary educational institutions. Students attending universities, colleges, high schools or certain other certified educational institutions in Canada may deduct their tuition fees if they exceed \$25 per annum. Students in full-time attendance at universities outside Canada are also allowed to deduct their tuition fees.

An individual who is carrying on a business may deduct his business expenses in computing his income. These include wages, rents, depreciation (called capital cost allowances), municipal taxes, interest on borrowed money, reserves for doubtful debts, contributions to pension plans or profit-sharing plans for his employees, and bad debts.

All individuals now have to count half of their capital gains as income. They may deduct half of their capital losses against these gains. In the event that half of an individual's losses exceed the amount included in income in respect of capital gains, \$1,000 of these losses may be deducted from other income. Losses not deducted in the year incurred may be carried back one year or forward to future years to be deducted. Capital gains or losses are those realized on the disposition of property. Other gains or losses such as from a lottery or gambling are not

included. The sale of personal property at a price not exceeding \$1,000, and the sale of a taxpayer's home, do not create a capital gain or loss. A sale or disposition of property is deemed to have taken place when the taxpayer dies or makes a gift of property unless the property is left or given to his spouse. The amount of a capital gain or loss on disposition of property is determined by reference to its adjusted cost basis. Capital gains on property owned at the beginning of the system are computed by reference to the higher of cost or valuation-day value and capital losses by reference to the lower of cost or valuation-day value. When property is acquired after valuation day, actual cost plus or minus adjustments after that date will give the adjusted cost basis. Valuation day for purposes of shares that are publicly traded on Canadian stock exchanges was December 22, 1971 and the valuation day for all other property, such as bonds, rental property, cottages or shares in a private company was December 31, 1971. Special rules apply for individuals who become, or cease to be, residents of Canada. Gains arising out of the conduct of a business continue to be fully taxable.

Having computed his income, the individual then calculates his taxable income by deducting certain exemptions and deductions. These are: for single status, \$1,500; for married status, \$2,850; for dependent children under age 16, \$300 per child; for other dependants (as defined in the law), including dependent children over age 15 and under 21 or over 20 and attending school, \$550 per dependant; where the taxpayer is 65 years of age or over, an additional \$650; where the taxpayer is blind or confined for the whole of the taxation year to a bed or a wheelchair, an additional \$650; charitable donations, up to 20% of income; and medical expenses, the amount in excess of 3% of income. In lieu of claiming deductions for charitable donations and medical expenses an individual may claim a standard deduction of \$100.

The extra deduction for married status is reduced where the taxpayer's spouse has income in excess of \$250. The deduction of \$300 for supporting a child is reduced where the child has income in excess of \$1,000 and the deduction of \$550 is reduced where the dependant has income in excess of \$1,050. The amount of the guaranteed income supplement, which is a payment made to individuals who have little or no income in addition to their old age pension, is deductible in computing taxable income. Individuals who have incurred business losses in other years may deduct these in computing taxable income.

As already stated, an individual who is resident in Canada is taxed on his income from both inside and outside Canada. An individual who is not resident in Canada at any time during the year but who carries on business in Canada or who earns salary or wages in Canada is taxed on the income earned in Canada. In computing taxable income earned in Canada, such a non-resident individual is allowed to deduct that part of the exemptions and deductions that may reasonably be attributed to the income earned in Canada. An individual who ceases to be a resident of Canada during the year or who becomes a resident during the year so that he is resident for only part of the year is subject to income tax as a resident of Canada on only that part of his income for the year received while he is resident in Canada. In these circumstances, the deductions from income permitted in determining taxable income are the amounts which may reasonably be considered as applicable to the period during which he is resident in Canada.

A non-resident who disposes of taxable Canadian property (shares of Canadian public corporations are excluded unless ownership exceeds 25%) is liable for tax on one half of any capital gain. Capital gains or losses from the disposal of taxable Canadian property are combined with the non-resident's Canadian employment or business income. This taxation of capital gains is subject to restrictions in a number of tax treaties between Canada and other countries.

Two provisions were enacted in 1971 to provide for averaging income over a period of years where income for a year is unusually high. The first of these is an averaging calculation that will be made by the Department of National Revenue where an individual's income for the year is 20% more than the average of his incomes for the preceding four years and 10% more than his income for the immediately preceding year. This calculation, which will be made without application by the taxpayer, will reduce the effects of the progressive schedule of rates upon an unusual increase in income in the year. The calculation will first be made for 1973, using 1972 as the base. It will not be possible to use four preceding years in the base until 1976. The second averaging device, which first becomes effective for 1972, is by the purchase of a special type of annuity contract called an income-averaging annuity. The cost of this annuity

contract is deductible from income in the year it is purchased and the annuity payments are included in income when received. Only certain kinds of income may be used to purchase an income-averaging annuity. These include capital gains, a lump sum from a pension plan, proceeds from a literary or artistic work or amounts received from activities as an athlete, musician or public entertainer.

The amount of tax is determined by applying a progressive schedule of rates to taxable income. This schedule of rates starts at 17% on the first \$500 of taxable income and increases to 47% on taxable income in excess of \$60,000. For 1972, tax otherwise payable was reduced by 3%. In addition, the Income Tax Act provides that the rate of tax on the first \$500 of taxable income, which is 17% in 1972, will be reduced each year until it becomes 6% in 1976.

Individuals who reside in the Yukon Territory or the Northwest Territories or who reside outside Canada but are deemed to be residents in Canada for tax purposes (such as diplomats and others posted outside the country) must pay an additional tax of 30% of their tax otherwise payable. This tax is intended to correspond in an approximate way to the income tax imposed by the provinces on their residents.

An individual who receives a taxable dividend from a Canadian corporation is allowed to deduct an amount called a dividend tax credit from his tax otherwise payable. This is in recognition of the fact that the earnings from which the dividend is paid have borne corporation income tax. It also provides encouragement for Canadians to participate in ownership of Canadian corporations. The individual increases the amount of the dividends he has received by one third and includes this additional one third in his income. He then deducts from his tax an amount equal to four fifths of the additional one third that was included in his income.

An individual who receives income from foreign sources may deduct from his tax the amount of tax he has paid to a foreign government on his foreign source income. This deduction may not exceed the Canadian tax related to such income.

An individual who earns income in Quebec may deduct 24% of his tax attributable to such income. This abatement of tax is in recognition of the fact that Quebec entirely finances certain programs which are partly financed by the federal government in other provinces.

To a very large extent, individual income tax is payable as the income is earned. Taxpayers in receipt of salary or wages have tax deducted from their pay by their employer and in this way pay nearly 100% of their tax liability during the calendar year. The balance of the tax, if any, is payable at the time of filing the tax return on or before April 30 in the following year. Individuals with more than 25% of their income in a form not subject to tax deductions at the source must pay tax by quarterly instalments throughout the year. Returns of these individuals must be filed on or before April 30 in the following calendar year. Farmers and fishermen pay two thirds of their tax on or before December 31 each year and the remainder on or before April 30 in the following year. Table 20.24 shows the amount of personal income tax payable on various levels of income in 1972.

Corporation income tax. The Income Tax Act levies a tax upon the income from anywhere in the world of corporations resident in Canada and upon the income attributable to operations in Canada of non-resident corporations carrying on business in Canada. One half of capital gains must be included in income. In computing their income, corporations may deduct operating expenses including municipal real estate taxes, reserves for doubtful debts, bad debts and interest on borrowed money. The deduction for interest includes interest on money borrowed to acquire shares in another corporation. There is a limitation on the deduction of interest paid to non-residents. One half of capital losses may be deducted from the capital gains included in income.

Corporations may deduct over a period of years the capital cost of all depreciable property. The yearly deductions of normal capital cost allowances are computed on the diminishing balance principle. Regulations issued under authority of the Income Tax Act established a number of classes of property and maximum rates. Typical rates include 5% and 10% for buildings, 20% for machinery and 30% for automobiles. Where property is disposed of for more than the amount to which it has been written down by capital cost allowances, the excess allowances are "recaptured" through an addition to income or by an adjustment to the undepreciated balance for the class of property.

Accelerated depreciation (full write-off in two years) is allowed in respect of structures

and equipment acquired in the period April 27, 1965 to December 31, 1973 to prevent water pollution, and in the period March 13, 1970 to December 31, 1973 to prevent air pollution.

A corporate taxpayer who does not elect to receive a grant under the Training-on-the-Job Program may deduct 60% of approved wage costs incurred in the period after October 1971 and before April 1974. This deduction is in addition to the normal deduction for wages. Expenditures on scientific research related to the business of the taxpayer may be written off for tax purposes in the year when incurred.

A corporation whose principal business is mining, oil production and allied activities may deduct the costs of exploration and development in Canada against any income in the year the costs were incurred or in subsequent years. Taxpayers who do not meet the "principal business" test are entitled to deduct exploration and development expenses from mining and petroleum income. Starting in 1972, these expenses will be deductible from other income over a period of time if they exceed mining and petroleum income. Taxpayers may deduct certain foreign drilling expenses from directly related foreign-source income. Starting in 1972, all taxpayers may put foreign exploration and development expenses in a separate asset class and deduct them over a period of time if they exceed income from foreign mineral and petroleum properties.

The profits derived during the first three years of operation of a new mine are exempt from income tax until December 31, 1973. In place of the three-year tax exemption there will be an immediate write-off of capital equipment and facilities for a new mine to the extent of income from the mine. The assets eligible for this accelerated depreciation include buildings, mining machinery, processing facilities and "social capital" such as access roads, sewage plants, housing, schools, airports and docks. The accelerated write-off provision for new mines will also apply in the case of a major expansion of an existing mine where there has been at least a 25% increase in milling capacity. The list of eligible assets is the same as for new mines except that "social capital" does not qualify.

Taxpayers operating mines, oil wells, gas wells and wells for extracting potash by the solution method have been allowed a depletion allowance, usually computed as a percentage of profits (after deduction of capital cost allowances, exploration and drilling expenses and certain interest expenses) derived from mineral, oil or gas production. This allowance is in addition to capital cost allowances on buildings, machinery and similar depreciable assets used by the taxpayer and the deduction of his exploration and drilling expenses. This will continue until the end of 1976 after which a taxpayer will be able to deduct depletion only if it has been "earned" by exploration. For every \$3 of eligible expenditures, a taxpayer will earn the right to deduct \$1 of depletion. Eligible expenditures made after November 7, 1969 can be accumulated for the purpose of calculating earned depletion for 1977 and subsequent years.

Taxpayers operating timber limits receive an annual cost allowance which is a rateable proportion of the amount invested in the limit and is based on the amount of timber cut in the year.

In computing taxable income, corporations, with certain exceptions, may deduct dividends received from other Canadian taxable corporations and also from certain non-resident affiliates. Business losses may be carried back one year or forward five years and deducted in computing taxable income. Corporations may also deduct donations to charitable organizations up to a maximum of 20% of their income.

The general rates of tax payable by corporations on their taxable income are as follows: 1972, 50%; 1973, 49%; 1974, 48%; 1975, 47%; 1976 and subsequent years, 46%. These rates of tax are reduced by ten percentage points on income earned in a province. This "provincial abatement" is provided to make room for provincial income taxes. At the present time, provincial rates of corporate income tax range from 10% to 13%. For profits earned in the period July 1, 1971 to December 31, 1972, there is a temporary tax reduction equal to 7% of the tax otherwise payable before the ten percentage points provincial abatement.

A "small business deduction" reduces the rate of tax on certain business income to 25%. This concession is restricted to Canadian corporations which are not controlled by a non-resident corporation or by a Canadian public corporation. It applies only to income from an active business carried on in Canada and not to investment income. The maximum amount of taxable income on which the deduction may be calculated is \$50,000 in any one year. A corporation is entitled to this deduction only until it has accumulated \$400,000 of taxable income commencing with taxation years starting after 1971. The payment of taxable dividends

reduces the accumulation of taxable income for purposes of this limitation. The rate of 25% referred to will not be affected by the gradual reduction in the general federal rate of corporation income tax between 1972 and 1976 but this 25% rate is reduced by the ten percentage points provincial abatement.

A corporation that qualifies as an "investment corporation" pays tax at a rate of only 25%. This rate is also reduced by the provincial abatement.

The investment income (other than dividends) of a private corporation is subject to the general rate of tax (i.e., 50% in 1972 becoming 46% in 1976 less the provincial abatement) but an amount not exceeding 25% of this income is refunded when dividends are paid to shareholders.

Dividends received by a private corporation from a Canadian corporation controlled by it are deductible in computing its taxable income (except where paid out of designated surplus or under conditions that entitle the paying corporation to a refund). Dividends received by a private corporation from portfolio investments are subject to a special 33½% tax but this is refunded when dividends are paid to shareholders.

A corporation may elect to pay a special 15% tax on its 1971 undistributed income on hand. Dividends received from this tax-paid undistributed income are not included in the income of the receiving shareholder but the amount of the dividend will reduce the adjusted cost basis of the shares for capital gains tax purposes. Dividends paid from the untaxed half of a corporation's capital gains are also excluded from the income of the recipient shareholders but with no similar reduction in the adjusted cost base of the shares for capital gains tax purposes.

Special rules are provided for the taxation of special-purpose companies such as mutual fund corporations, life insurance companies, non-resident-owned investment companies and co-operatives.

In addition to the reduction equal to 10% of taxable income earned in a province, a corporation may reduce its tax by a credit for taxes paid to foreign governments on foreign source income. This credit may not exceed the Canadian tax related to such income. A corporation may also deduct from its tax an amount equal to two thirds of a provincial tax on income from logging operations not exceeding 6⅓% of its income from logging operations in the province. (At present only Ontario, Quebec and British Columbia impose logging taxes.) Commencing in 1977, a mining corporation will be able to claim an extra federal tax abatement of 15% of its production profits in a province.

Corporations are required to pay their tax by monthly instalments throughout their taxation year. Any balance of tax remaining has to be paid by the last day of the third month following the close of the taxation year, and the return for the year must be filed by the last day of the sixth month following the close of the taxation year.

Taxation of non-residents. An individual or corporation not resident in Canada is liable for Canadian income tax on income from employment or from carrying on business in Canada and on one half of capital gains less losses on disposals of "taxable Canadian property". For this purpose taxable Canadian property includes: real property interests situated in Canada; assets used in carrying on business in Canada; interests in certain partnerships and trusts; shares in a corporation resident in Canada other than a public corporation; and shares in Canadian public corporations where the non-resident owns a 25% or greater interest. The taxation of capital gains may be restricted by the provisions in tax treaties between Canada and other countries.

The expression "carrying on business in Canada" includes producing, growing, packaging or improving any article in Canada and also soliciting orders or offering anything for sale in Canada through an agent or servant. However, this is usually modified by tax treaties so that an enterprise of the other country is taxed by Canada on its industrial and commercial profits only if it carries on business through a permanent establishment in this country. Tax treaties also provide some exemptions from tax on remuneration for services.

The taxable income of non-resident individuals derived from employment or carrying on business or from capital gains in Canada is taxed under the same schedule of rates as Canadian resident individuals.

Income earned by non-resident corporations carrying on business or from capital gains in Canada is taxed at the regular rates of corporation income tax. The distributable business

earnings of a branch of a non-resident corporation are also subject to an additional tax often referred to as a branch tax. This tax applies to the branch earnings net of taxes that are not reinvested in the business in Canada. The branch tax, which is imposed at the same rate as the non-resident withholding tax on dividends referred to below, is designed to place non-resident corporations that carry on business through a branch in Canada in a comparable position to those non-residents that conduct their Canadian operations through a separate company incorporated in Canada.

Certain specific items of income paid to non-residents from sources in Canada are subject to tax withheld at the source by the Canadian payer. This non-resident withholding tax applies to interest (except interest on certain bonds and interest paid to certain exempt lenders), dividends, rents, royalties, management fees, income from a trust or estate, alimony, pension benefits (other than the old age security pension and up to \$1,290 of Canada Pension Plan or Quebec Pension Plan benefits), proceeds from deferred income plans and the taxable portion of annuities. The rate of this tax is generally 15% but the rate on royalties from motion picture and television films is only 10% and the standard rate of 15% on dividends is reduced to 10% in the case of dividends paid by a corporation that has a degree of Canadian ownership. Generally, a corporation is regarded as having a degree of Canadian ownership where 25% of its equity and voting shares are owned by Canadians and/or corporations controlled in Canada, or where the voting shares of the corporation are listed on a Canadian stock exchange and no more than 75% of its issued outstanding voting shares are owned by a non-resident alone or in combination with related persons.

The Income Tax Act provides that the rate of the above-mentioned non-resident withholding tax will become 25% in 1976, except for the rate on dividends paid by a corporation with a degree of Canadian ownership which will be 20%. These rates may be modified by tax treaties.

Non-residents who receive from sources in Canada only the kinds of income subject to the non-resident withholding tax do not file returns to Canada. However, those who receive rents on real property, timber royalties, pension benefits or proceeds from deferred income plans may elect to file returns and be taxed at personal or corporation rates as the case may be.

Estate and gift taxes. The federal government formerly imposed an estate tax and a tax on gifts. These taxes do not apply in the case of a death occurring after 1971 or to a gift made after 1971.

Excise taxes. The Excise Tax Act levies a general sales tax and special excise taxes. These taxes are levied on goods imported into Canada as well as on goods produced in Canada. They are not levied on goods exported.

The general sales tax is at the rate of 12%. It is levied on the manufacturer's sale price of goods produced or manufactured in Canada or on the duty-paid value of goods imported into Canada. "Duty-paid value" includes the amount of customs duties, if any. For alcoholic beverages and tobacco products the sale price for purposes of the sales tax includes excise duties levied under the Excise Act. The rate of sales tax on a long list of building materials is 11% instead of 12%.

Some goods are exempt from sales tax. Drugs, electricity, fuels for lighting or heating and most foodstuffs are exempt, and also articles and materials purchased by public hospitals and certain welfare institutions. The products of farms, forests, mines and fisheries are, to a large extent, exempt as well as most equipment used in farming and fishing. Machinery and equipment used directly in production and materials consumed or expended in production are also exempt, and also equipment acquired by manufacturers or producers to prevent or reduce pollution to water, soil or air from their manufacturing operations. A number of items are exempt when purchased by municipalities. These and other exemptions are set forth in the schedules to the Excise Tax Act.

The Excise Tax Act also imposes a number of special excise taxes which are in addition to the sales tax. Where these are ad valorem taxes they are levied on the same price or duty-paid value as the general sales tax. The special excise taxes levied at present are given in Table 20.25.

Excise duties. The Excise Act levies taxes (referred to as excise duties) upon alcohol, alcoholic beverages (other than wines) and tobacco products. These duties are not levied on imports but the customs tariff applies special duties to these products equivalent to the excise duties levied on the products manufactured in Canada. Exported goods are not subject to excise duties.

The duties on spirits are on a proof gallon basis. They do not apply to denatured alcohol intended for use in the arts and industries, or for fuel, light or power, or any mechanical purposes. The various duties are as follows: on every gallon of the strength of proof distilled in Canada, \$14.25; on every gallon of the strength of proof used in manufacture of: medicines, extracts, pharmaceutical preparations, etc., \$1.50 per gallon; approved chemical compositions, 15 cents per gallon; spirits sold to a druggist and used in the preparation of prescriptions, \$1.50 per gallon; imported spirits when taken into a bonded manufactory in addition to other duties, 30 cents per gallon.

Canadian brandy (a spirit distilled exclusively from juices of native fruits without the addition of sweetening materials) is subject to an excise duty of \$12.25 per proof gallon. All beer or other malt liquor is subject to a duty of 42 cents per gallon.

Excise duties are imposed on tobacco, cigars and cigarettes in addition to the special excise taxes which have already been described. The rates of excise duty are as follows: on manufactured tobacco of all descriptions, except cigarettes, 35 cents per lb.; cigarettes weighing not more than three lb. per thousand (nearly all of the cigarettes used in Canada are of this type), \$4 per thousand; cigarettes weighing more than three lb. per thousand, \$5 per thousand; cigars, \$2 per thousand; Canadian raw leaf tobacco when sold for consumption, 10 cents per lb.

Total taxes on tobacco products. The aggregate of taxes imposed on tobacco products under the Excise Tax Act and the duties imposed under the Excise Act are: cigarettes, \$10 per thousand (20 cents per pack of 20 cigarettes) plus the 12% sales tax on the manufacturer's sale price; pipe and cut tobacco, \$1.25 per lb. plus the 12% sales tax on the manufacturer's sale price; cigars, \$2 per thousand plus the 17½% special excise tax and the 12% sales tax on the manufacturer's sale price.

Customs duties. Most goods imported into Canada are subject to customs duties at various rates as provided by tariff schedules. Customs duties which once were the chief source of revenue for the country have declined in importance as a source of revenue to the point where they now provide less than 10% of the total. Quite apart from its revenue aspects, however, the tariff still occupies an important place as an instrument of economic policy.

The Canadian Tariff consists mainly of three sets of rates, namely, British Preferential, Most-Favoured-Nation and General. The British Preferential rates are, with some exceptions, the lowest rates. They are applied to imported dutiable commodities shipped directly to Canada from countries within the British Commonwealth. Special rates lower than the ordinary preferential duty are applied on certain goods imported from designated Commonwealth countries.

The Most-Favoured-Nation rates apply to goods from countries that have been accorded tariff treatment more favourable than the General Tariff but which are not entitled to the British Preferential rate. Canada has Most-Favoured-Nation arrangements with almost every country outside the Commonwealth. The most important agreement providing for the exchange of Most-Favoured-Nation treatment is the General Agreement on Tariffs and Trade.

The General Tariff applies to imports from countries not entitled to either the British Preferential or Most-Favoured-Nation treatment. Few countries are in this category and in terms of trade coverage are negligible.

In all cases where the tariff applies there are provisions for drawbacks of duty on imports of materials used in the manufacture of products later exported. The purpose of these drawbacks is to assist Canadian manufacturers to compete with foreign manufacturers of similar goods. There is a second class of drawbacks known as "home consumption" drawbacks. These apply to imported materials used in the production of specified classes of goods manufactured for home consumption.

The tariff schedules are too lengthy and complicated to be summarized here but the rates which apply on any particular item may be obtained from the Department of National Revenue which is responsible for administering the Customs Tariff.

20.6.2 Provincial taxes

All of Canada's ten provinces impose a wide variety of taxes to raise the revenue necessary for provincial purposes. All provinces levy a tax on the income of individuals and corporations resident within their boundaries or deriving income from activities or operations carried out

therein. Only Ontario and Quebec impose special taxes on corporations in addition to income tax. All provinces except Alberta impose a tax on property passing at death, referred to as succession duties; these provinces also impose a tax on gifts. Under the terms of the existing federal-provincial fiscal arrangements, the federal government makes equalization payments to some provinces in recognition of the fact that the potential tax yield in those provinces, measured on a per capita basis, is lower than the national per capita tax yield. For some provinces, the equalization payments constitute a very important source of revenue.

Individual income tax. All provinces levy a tax on the income of individuals who reside within their boundaries or who earn business income therein. An individual who is resident in a particular province on the last day of the year, and has no income for the year from a business with a permanent establishment outside the province, is taxable by the province on his world income for the year. Income earned from employment in a province by a non-resident of Canada is taxable by the province. Income earned by an individual not resident in a particular province from carrying on a business through a permanent establishment in that province is taxable by that province.

In nine of the ten provinces, the provincial taxes are computed as a percentage of federal tax, "Federal tax", on which the provinces impose their tax, is after the dividend tax credit but before any foreign tax credit or the special 3% reduction for 1972. In Quebec, provincial income tax is levied at graduated rates that progress from 10% on the first \$2,000 of taxable income to a maximum of 28% on the excess over \$60,000. The determination of taxable income for Quebec tax is based on exemptions and deductions which, with the exception of deductions for dependent children under age 16, are similar to those for federal tax. Quebec taxpayers who have married status for tax purposes do not pay the provincial tax unless their net income exceeds \$4,000; all other Quebec taxpayers do not pay the tax unless their net income exceeds \$2,000.

Provincial income tax liability represents the following percentage of federal tax for 1972: Newfoundland, 36%; Prince Edward Island, 36%; Nova Scotia, 38.5%; New Brunswick, 41.5%; Ontario, 29.585%; Manitoba, 42.5%; Saskatchewan, 40%; Alberta, 36%; British Columbia, 30.5%. Quebec's liability is not directly related to federal tax but is approximately 58%. However, since Quebec taxpayers receive a deduction of 24% of federal tax from the federal government, Quebec provincial income tax represents 34% of the federal tax.

All provinces except Quebec have signed agreements for the collection of their individual income tax by the federal government. Both Ontario and Manitoba have introduced property tax credit schemes which are administered through the tax collection machinery of the Department of National Revenue. These plans are designed to integrate the income and property taxes.

Corporate income tax. All provinces levy a tax on the taxable income of corporations derived from activities carried out within their boundaries. In all provinces except Ontario and Quebec, the provincial tax imposed on taxable income in the province is determined on the same basis as for federal income tax. In Ontario and Quebec, the determination of taxable income for purposes of provincial tax follows closely the federal rules. Six of the ten provinces levy corporate income taxes at rates in excess of the 10% abatement allowed by the federal government. The rate that applies in Alberta is 11%, in Saskatchewan, Ontario and Quebec, 12%, and in Newfoundland and Manitoba, 13%. All provinces except Ontario and Quebec have signed agreements for the collection of the corporate income taxes by the federal government.

Taxes on alcoholic beverages and tobacco. Generally, spirits are sold in all provinces through provincial agencies operating as boards or commissions which exercise monopolistic control over alcoholic beverages. The provincial mark-up over the manufacturer's price (usually on top of the government established price) is the effective means of taxation. Beer and wine may be sold by retailers or government stores, depending on the province, but in all cases these sales contribute to provincial revenues. With the exception of Ontario and Manitoba, and some variations in the taxing of beer, each province with a retail sales tax generally imposes the basic rate of tax on all sales of beer, wine and spirits. Ontario taxes retail sales of alcoholic beverages at a special 10% rate, and Manitoba taxes retail sales of wine, spirits and imported beer at 10%, with beer manufactured in Canada remaining taxable at the 5% basic rate. On table wines retailing under \$3, the Manitoba Liquor Control Commission maintains a reduced mark-up to

offset the increase of sales tax from the 5% to the 10% rate. Prince Edward Island imposes a tax of 10% on all beer, wine and spirits sold at retail, collected under authority of the Health Tax Act.

All provinces impose special retail taxes on the sale of tobacco products. The rates of tax per cigarette are as follows: Newfoundland, 1 cent; Prince Edward Island, Nova Scotia, New Brunswick, Quebec and Manitoba, 3/5ths cent; Ontario, 23/50ths cent; and Saskatchewan, Alberta and British Columbia, 8/25ths cent. In addition, the provinces impose special taxes on cigars and cut tobacco.

Retail sales taxes. Retail sales taxes are levied on the final purchaser or user and are collected by the retailer. All provinces except Alberta levy this type of tax at rates as follows: Newfoundland and Nova Scotia, 7%; Prince Edward Island, New Brunswick and Quebec, 8%; and Manitoba, Saskatchewan and British Columbia, 5%. Ontario has a dual rate structure. A rate of 5% is charged on most taxable items; 10% is charged on amusement, meals over \$2.50 and beer and spirits. These direct levies apply to tangible taxable commodities sold, with varying exemptions, for consumption in the province and to a few selected services, for example: to telephone services in all provinces; in Quebec, to telecommunications, meals and hotel and motel charges; in Prince Edward Island, to laundry and dry cleaning services, to accommodations, and to repair and installations labour; in New Brunswick, to telecommunications, to meals and hotel and motel charges and to laundry and dry cleaning charges; and in Manitoba, to a broad range of services including dry cleaning, furniture repairs, motel accommodation, etc. The sales taxes do not apply to goods sold for delivery in other provinces or to exported commodities. All provinces imposing sales taxes provide comprehensive exemptions for foodstuffs and drugs; in Quebec and New Brunswick, pharmaceutical products are exempt only when sold on prescription. In British Columbia, a 5% levy on accommodations is made under the Hotel and Motel Room Tax Act.

Amusement taxes. Each of the provinces with the exception of Newfoundland, Alberta, Saskatchewan and British Columbia has a tax on admission to places of entertainment. In Quebec, this tax is payable on race course admissions only. In addition, there is generally a licence fee imposed on the operator or owner of these amusement places. The tax on admissions is within the range of 5% to 15%.

Gasoline and diesel fuel oil taxes. Each of the ten provinces imposes a tax on the purchase of gasoline by motorists and truckers. The rates vary from 15 cents per gallon in Alberta and British Columbia to 21 cents in Prince Edward Island and 25 cents in Newfoundland. The amount of tax borne by one gallon of gasoline and diesel fuel, respectively, in each province is: Newfoundland 25 cents, 25 cents; Prince Edward Island 21 cents, 25 cents; Nova Scotia 21 cents, 27 cents; New Brunswick 20 cents, 23 cents; Quebec 19 cents, 25 cents; Ontario 19 cents, 25 cents; Manitoba 17 cents, 20 cents; Saskatchewan 19 cents, 21 cents; Alberta 15 cents, 17 cents; British Columbia 15 cents, 17 cents.

Certain qualifications apply to the above taxes. In Prince Edward Island, gasoline and diesel fuel used by primary producers — farmers, fishermen, manufacturers and processors — are exempt from tax as are also gasoline and motor fuel used by owners or operators of ski-tows, and that used by consumers engaged in the construction of the Northumberland Strait Crossing. In Quebec and Ontario, some relief from taxation is given where gasoline or fuel oil is used for farming, manufacturing, commercial fishing and in stationary engines. In Manitoba, exemptions or refunds are allowed on fuel used in operating agricultural machinery, farm trucks and municipal fire apparatus, and in trapping, fishing and prospecting; diesel fuel for off-highway use is taxable at 20 cents per gallon at the time of purchase but a refund of 15 cents per gallon is subsequently allowed to the purchaser. In Saskatchewan, gasoline and diesel fuel used by farmers in farm machinery and trucks are exempt from tax. In Alberta, tax on fuel for domestic heating is three cents less than shown; gasoline and diesel fuel used in aircraft, motor boats, snowmobiles and off-highway internal combustion engines are taxed at three cents per gallon and exemption is allowed for other uses, including farm trucks and machinery. In British Columbia the net tax rate (after refund) on gasoline used in logging trucks off highway, in certain power units of motor vehicles for stationary industrial use and in vehicles used by certain handicapped persons, on motor fuels coloured purple for certain off-highway use (including marine) and on aviation fuels is three cents per gallon; on motor fuels coloured purple used by bona fide farmers and commercial

fishermen the rate is one cent per gallon; and fuel oil for heating purposes is one half cent per gallon.

Motor vehicle licences and fees. Each province levies a fee on the annual registration of motor vehicles, which is compulsory. Upon registration, a vehicle is issued with licence plates. The rates of fee vary from province to province and, in the case of passenger cars, may be assessed on the weight of the vehicle, the wheel base, the year of manufacture, the number of cylinders of the engine, or at a flat rate. The fees for commercial motor vehicles and trailers are based on the gross weight for which the vehicle is registered, i.e., the weight of the vehicle empty plus the load it is permitted to carry. Every operator or driver of a motor vehicle is required to register periodically and pay a fee for a new driver's licence. The licences are valid for periods of from one to five years and the fees vary from \$1 to \$7 a year.

Taxes on mining operations. All provinces except Prince Edward Island levy taxes of various kinds on mining operations. All provinces impose a tax on the income of firms engaged in mining operations in general or in specific kinds of mining operations. British Columbia, Alberta, Saskatchewan and Manitoba (gas, oil and potash only) impose a tax on the assessed value of minerals or a flat rate per acre of mining property. Quebec levies a tax on the economic value of ore at the pithead in excess of \$50,000, ranging between 9% and 15%, depending on volume. Ontario imposes a tax on the profit on the assessed value of minerals and a flat rate per acre of mining property. Manitoba imposes a flat rate of 15% if mining income exceeds \$50,000; if income is \$50,000 or less, the tax rate is 6%. The British Columbia mining tax rate is 15% on net income from mining in excess of \$10,000.

Tax on logging operations. Quebec, Ontario and British Columbia levy a tax on the income from logging operations of individuals, partnerships, associations or corporations engaged in this activity. In Quebec and Ontario the rate is 10% and in British Columbia 15% on net income where in excess of \$10,000 (in Quebec and British Columbia if the net income is greater than \$10,000 the whole amount is taxable with no basic exemption). In Ontario and Quebec one third and in British Columbia 20% of the tax is allowed as a deduction from provincial corporate income tax or, in Quebec, from the provincial income tax; two thirds of the provincial tax is deductible from federal income tax.

Business taxes. Quebec imposes a tax of one fifth of 1% on paid-up capital of corporations and Ontario levies a similar tax at the rate of one tenth of 1%. Quebec has a place-of-business tax, which is generally \$50 but is reduced to \$25 when the paid-up capital is less than \$25,000; in the case of loan companies, the tax is \$100 when fixed capital exceeds \$100,000. Both Ontario and Quebec levy special taxes on certain kinds of companies such as banks, railway companies, express companies, trust companies and sleeping-car, parlour-car and dining-car companies. In Ontario, these special taxes and the paid-up capital tax are payable over and above the corporation income tax.

Prince Edward Island charges special annual licence fees to most insurance companies, banks, acceptance companies, chain theatres and chain stores, steamship companies, telephone, telegraph and electric light companies and brokers, as well as nominal licence fees to other incorporated companies, the latter being similar to filing fees in other provinces.

Land transfer taxes. Ontario levies a tax based on the price at which ownership of land is transferred; three tenths of 1% is imposed on the purchase price up to \$35,000 and six tenths of 1% on anything in excess of that amount. In Alberta, a registration fee is charged proportional to the registered value of the land; \$5 for the first \$1,000 and \$1 for each additional \$1,000 up to \$25,000 and 50 cents per \$1,000 in excess of that amount; in addition, there is an Assurance Fund fee charged on transfers of mortgages on the difference between the old registered price and the new registered price at the rate of \$2 per \$1,000 up to \$5,000 and \$1 for each additional \$1,000. British Columbia and Saskatchewan do not have a land transfer tax but have an equivalent in land title fees which are based on land values.

Tax on security transfers. Ontario levies a tax on the sale price of securities transferred; the rates are: shares sold, transferred or assigned valued at — under \$1, 1/10th of 1% of value; \$1 to \$5, 1/4 cent per share; \$5 to \$25, 1 cent per share; \$25 to \$50, 2 cents per share; \$50 to \$75, 3 cents per share; \$75 to \$150, 4 cents per share; over \$150, 4 cents per share plus 1/10th of 1% of value in excess of \$150; bonds and debentures, 3 cents for every \$100 or fraction thereof of par value.

Tax on premium income of insurance companies. All ten provinces impose a tax of 2% on the premium income of insurance companies relative to risks incurred in the province; in Alberta, this tax is imposed on the direct written business after deducting dividends and refunds. Saskatchewan imposes a tax of 1% on the motor vehicle premium income of insurance companies to finance a comprehensive high school driver-training program.

Succession duties and gift taxes. All the provinces except Alberta levy succession duties. These duties are a tax upon a succession to property of a deceased person by his beneficiary. Ontario, Quebec and British Columbia collect their own succession duties. The four Atlantic Provinces and Manitoba and Saskatchewan reimposed succession duties with effect from January 1, 1972; however, Prince Edward Island repealed this legislation effective January 1, 1973. The duties are collected by the federal government as agent under three-year collection agreements.

All the provinces except Alberta levy a gift tax. This is a tax on the total value of gifts made in the year by a living person resident in the province. It is intended primarily to protect the revenue from succession duties. For all provinces, except Quebec and Alberta, the tax will be collected by the federal government as agent under collection agreements. Quebec administers its own gift tax.

Provincial property taxes. In unorganized (non-municipal) areas, British Columbia levies property taxes at varying rates according to class for provincial revenue. Improved, forest and tree-farm lands are taxed at 1% of assessed value; farm land at one half of 1%; wild land at 3%; coal land at 2% (non-operating) or 7% (operating); and timber land at 1½%. In unorganized (non-municipal) areas, Ontario levies a property tax of 1½% of assessed value; the minimum annual tax in respect of any land is \$6. New Brunswick levies a tax of \$1.50 per \$100 market value assessment on all land and buildings in the province and a similar tax on business occupancy, as a source of provincial revenue. Prince Edward Island levies a tax of \$1.10 per \$100 market value assessment on all land and buildings in the province and a similar tax on business occupancy. Farm land owned and cultivated by a bona fide farmer has a special farm assessment instead of market value assessment.

Race track taxes. Ontario levies a tax on operators of race meets and on holders of winning tickets issued under the pari-mutuel system. Holders of winning tickets must pay a tax equal to 7% of the amount that would be payable to them if no percentage were deducted by the person holding the race meet. A number of other provinces levy a pari-mutuel tax on money bet in the province on horse races: in Newfoundland the rate is 11%; in Prince Edward Island 11½%; in Nova Scotia 11% on the first \$400,000 wagered and a reduced percentage on any additional money wagered (some of this money is refundable to the individual race tracks); in New Brunswick 11% less commission of 8%; in Manitoba 10% less commission of 15% on the first \$10 million and 5% thereafter; in Alberta 5%; in Saskatchewan 10%; and in Quebec 7% on ordinary pools and 9% on special pools (quinella and daily-double). In British Columbia the tax is 8% of which 1% is earmarked to increase the purses of horses bred, born and raised in British Columbia.

Miscellaneous provincial taxes. In Newfoundland a tax of 7% is levied on premiums paid for all types of insurance except life, accident and sickness, and marine; and a telegraph tax is levied on companies operating cables or wireless stations between Newfoundland and points outside the province at the yearly rate of \$4,000 per cable or station.

In Prince Edward Island a fire marshal's tax is levied at the rate of three fourths of 1% on premiums paid for fire insurance. In Nova Scotia a fire marshal's tax is levied at the rate of one half of 1% on premiums paid for fire insurance in the province. A tax is also levied on long-distance telephone calls at the rate of five cents on the first 50 cents with a five-cent minimum and five cents on each additional 50 cents, applying only to calls made within the province.

20.6.3 Local taxes

Municipalities in Canada levy taxes on the owners of property situated within their jurisdiction according to the assessed value of such property. Methods of determining assessed value vary widely but for taxation purposes it is generally considered to be a percentage of the actual value or, as in Nova Scotia and New Brunswick, of the actual market value. The revenues from such taxes are used generally to pay for street maintenance, schools, police and

fire protection, snow removal in certain communities and other community services; in New Brunswick the municipal levy is used only for property service. Special levies are sometimes made on the basis of street frontage to pay for local improvements to the property, such as sidewalks, roads and sewers. Not only is there a widespread difference in the bases used for property tax but the rates applied vary widely depending on the municipality.

In addition to the taxes described above, municipalities usually impose a charge for water consumption by each property holder or a water tax based upon the rental value of the property occupied. In New Brunswick, utilities (water, domestic sewerage and treatment, and electric power) must be financed on a user-charge basis; a part of the water budget may be transferred to the general budget on a hydrant-rental basis or a percentage of the budget, depending on the size of the municipal population. There are no municipal income taxes although certain localities have retained the use of a poll tax. In Newfoundland, Quebec and Saskatchewan, municipalities are empowered to levy an amusement tax on the admission of persons to places of entertainment, although the amusement tax is generally a provincial preserve. Electricity and gas are taxed at the consumer level in some western municipalities and in some New Brunswick municipalities, and coal and fuel oil for heating purposes are chargeable in urban areas of Newfoundland. Telephone subscribers are subject to a special levy in Montreal and certain Ontario municipalities impose a tax on the gross receipts of telephone companies.

In most municipalities, a tax is levied directly on the tenant or the operator of a business. In general, business tax rates are lower than those applying to property. In New Brunswick, business assessment is equal to the value of the real property occupied for business purposes. Three bases of assessment are in use — a fraction of the property assessment, the annual rental value of the premises, or the area of the premises. Certain municipalities may charge a licence fee instead of a business tax but others charge both a licence fee and a business tax.

Sources

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- 20.2.1 Public Finance Division, Institutional and Public Finance Statistics Branch, Statistics Canada.
- 20.2.2 Statistics Section, Systems and Planning Branch, Department of National Revenue, Taxation; Business Finance Division, General Statistics Branch, Statistics Canada.
- 20.2.3 - 20.2.4 Public Finance Division, Institutional and Public Finance Statistics Branch, Statistics Canada.
- 20.3 Federal-Provincial Relations Division, Department of Finance.
- 20.4 - 20.5 Public Finance Division, Institutional and Public Finance Statistics Branch, Statistics Canada.
- 20.6 - 20.6.1 Personal, Commodity and Estate Tax Division, Department of Finance.
- 20.6.2 - 20.6.3 Respective provincial government authorities.

Tables

.. not available
... not appropriate or not applicable
— nil or zero
-- too small to be expressed

e estimate
p preliminary
r revised
certain tables may not add due to rounding

20.1 Consolidated government revenue and expenditure, after elimination of intergovernment transfers, 1965-69 (million dollars)

Source or function	1965	1966	1967	1968	1969
Gross general revenue by source					
Income tax					
Individuals	3,471.7	4,159.0	5,111.6	6,098.7	7,730.5
Corporations	2,282.4	2,307.2	2,416.6	2,873.4	3,700.7
General sales tax	2,737.6	3,082.7	3,405.2	3,493.8	3,973.6
Real and personal property tax	1,622.6	2,037.9	2,260.1	2,531.4	2,828.9
Other tax revenue	3,057.4	3,454.9	3,804.7	4,275.4	4,851.1
Non-tax revenue	2,615.3	2,848.9	3,441.4	4,088.3	4,737.6
Total	15,787.0	17,890.6	20,439.6	23,361.0	27,822.4
Gross general expenditure by function					
Education	2,619.8	3,484.4	4,207.5	4,811.3	5,554.1
Social welfare	2,386.3	2,642.1	3,246.7	3,679.8	4,015.2
Health	1,589.9	1,924.6	2,298.0	2,615.3	3,386.1
Debt charges (excluding debt retirement)	1,619.0	1,820.1	2,106.5	2,504.4	2,889.6
Transportation and communications	2,034.7	2,260.8	2,210.3	2,340.8	2,461.7
Defence	1,571.6	1,664.0	1,784.0	1,797.0	1,814.7
Natural resources and primary industries	733.8	903.1	1,041.7	1,085.6	1,348.4
Veterans pensions and other benefits	372.2	392.0	401.0	427.9	424.3
Contributions to own government enterprises	261.3	213.2	253.8	261.9	303.2
Other expenditure	3,114.8	3,921.3	4,546.6	5,045.2	5,668.6
Total	16,303.4	19,225.6	22,096.1	24,569.2	27,865.9
Gross general revenue less gross general expenditure	-516.4	-1,335.0	-1,656.5	-1,208.2	-43.5

20.2 Details of gross general revenue of the federal government, years ended Mar. 31, 1970 and 1971 (million dollars)

Source	1970	1971
Taxes		
Income		
Individuals	5,588	6,395
Corporations	2,839	2,427
On certain payments or credits to non-residents	249	258
General sales	2,294	2,281
Alcoholic beverages	335	360
Tobacco	486	527
Other commodities and services	73	73
Customs duties	818	815
Estate taxes	101	120
Social insurance levies ¹	492	495
Universal pension plan levies ²	746	813
Other	6	7
Total, taxes	14,027	14,571
Natural resources	9	8
Privileges, licences and permits	21	31
Sales of goods and services	373	485
Return on investments	786	949
Contributions to non-trusted public service pension plans	130	140
Postal receipts	431	418
Bullion and coinage	20	20
Fines and penalties	6	8
Miscellaneous	19	7
Total, gross general revenue from own sources	15,822	16,637
Specific purpose transfers from other levels of government	3	5
Total, gross general revenue	15,825	16,642

¹ Unemployment insurance.

² Canada Pension Plan.

20.3 Details of gross general expenditure of the federal government, years ended Mar. 31, 1970 and 1971 (million dollars)

Function	1970 ^r	1971
General government	732	991
Protection of persons and property ¹	1,821	2,034
Transportation and communications ²	1,058	1,032
Health	1,026	1,308
Hospital care	706	738
Other	320	570

20.3 Details of gross general expenditure of the federal government, years ended Mar. 31, 1970 and 1971 (million dollars) (concluded)

Function	1970 ¹	1971
Social welfare	3,950	4,496
Universal pension plans	65	89
Old age security	1,731	1,907
Veterans benefits	424	409
Unemployment insurance	443	838
Family and youth allowances	618	616
Assistance to disabled, handicapped, unemployed and other needy persons	585	560
Other	84	77
Education	639	872
Natural resources	279	272
Agriculture, trade and industry and tourism	842	819
Environment	12	9
Recreation and culture	103	113
Labour, employment and immigration	176	157
Housing	38	41
Foreign affairs and international assistance	252	289
Supervision and development of regions and localities	43	58
Research establishments	326	384
General purpose transfers to other levels of government	1,001	1,319
Transfers to own enterprises	246	256
Debt charges	1,151	1,233
Other	72	45
Total, gross general expenditure	13,767	15,728

¹ Includes National Defence.

² Includes Post Office.

20.4 Transfers by the federal government to provincial governments, territories and local governments, year ended Mar. 31, 1971 (thousand dollars)

Payee and purpose	Province or territory						
	Nfld.	PEI	NS	NB	Que.	Ont.	Man.
PROVINCIAL GOVERNMENTS AND TERRITORIES							
General purpose transfers							
Statutory subsidies	9,656	657	2,132	1,745	4,023	4,624	2,132
Federal estate tax	453	205	3,363	1,693	12,994	26,330	4,386
Federal corporation income tax on privately owned public utilities	1,030	212	1,642	112	3,031	10,575	736
Equalization	93,674	21,923	90,325	79,861	545,038	2,053	52,299
Established programs (Interim Arrangements Act)	—	—	—	—	185,618	—	—
Grants in lieu of taxes	—	—	—	1,784	—	—	—
Other	—	—	—	—	—	—	—
Total, general purpose transfers	104,813	22,997	97,462	85,195	750,704	43,582	59,553
Specific purpose transfers							
General government							
Other	123	101	734	3,695	29,987	12,164	850
Protection of persons and property							
Other (civil emergency measures)	82	21	112	1,533	843	1,077	144
Transportation and communications	9,608	92	1,456	4,234	16,094	6,906	951
Air	—	—	—	—	—	—	—
Road							
Trans-Canada Highway	9,607	88	1,456	4,153	13,600	5,674	947
Railway Grade Crossing Fund	1	4	—	81	2,494	1,232	4
Health							
Hospital care	24,057	4,849	37,581	28,146	—	369,485	46,997
Hospital insurance and diagnostic services	24,002	4,829	37,498	28,077	—	368,786	46,894
Professional training	55	20	83	69	—	699	103
Medical care	12,361	822	18,177	3,636	64,943	193,999	24,061
Health Resources Fund	101	4	376	170	8,743	19,465	761
Medical rehabilitation and crippled children	3	10	47	39	74	82	106
Medical Care Act	12,257	808	17,754	3,427	56,126	174,452	23,194
Preventive services	552	220	805	549	1,667	5,821	1,216
General public health	274	85	310	262	383	3,269	378
Tuberculosis control	46	11	35	28	178	237	40
Mental health	117	44	163	139	—	1,362	303
Cancer control	—	9	36	30	—	310	—
Child and maternal health	17	9	40	35	334	—	—
Public health research	98	62	221	55	772	643	495
Total, health	36,970	5,891	56,563	32,331	66,610	569,305	72,274
Social welfare							
Assistance to disabled, handicapped, unemployed and other needy individuals	22,271	3,851	17,714	16,657	159	179,662	29,417
Old age assistance	—12	—1	—11	—8	—54	—23	—11
Blind persons allowances	248	33	339	289	—1	81	129
Disabled persons allowances	61	30	488	1,103	—4	2,948	995
Canada Assistance Plan	21,967	3,766	16,743	15,242	—	176,377	28,187
Other	7	23	155	31	218	279	117
Other	944	—	44	—	17	3,353	754
Total, social welfare	23,215	3,851	17,758	16,657	176	183,015	30,171

20.4 Transfers by the federal government to provincial governments, territories and local governments, year ended Mar. 31, 1971 (thousand dollars) (continued)

Payee and purpose	Province or territory						
	Nfld.	PEI	NS	NB	Que.	Ont.	Man.
PROVINCIAL GOVERNMENTS AND TERRITORIES (concluded)							
Education							
Primary and secondary	—	—	—	1,000	—	—	—
Post-secondary	14,479	16,038	10,725	18,575	190,638	151,167	36,508
Capital assistance in providing training facilities (Adult Occupational Training Act)	8,574	2,188	9,384	10,985	76,523	7,758	19,054
Post-secondary education	5,905	13,850	1,341	7,590	114,115	143,409	17,454
Other	1	—	—	—	5,415	854	11
Canada Student Loans Act	—	—	—	—	5,350	—	—
Language texts for citizenship classes	—	—	—	—	33	63	5
Citizenship and language instructions for immigrants	1	—	—	—	32	791	6
Total, education	14,480	16,038	10,725	19,575	196,053	152,021	36,519
Natural resources							
Fish and game	789	37	109	271	—	9	3
Assistance in construction of fishing vessels	621	37	109	271	—	9	3
Relocating families from isolated fishing areas	168	—	—	—	—	—	—
Forests	693	—	—	—	—	—	—
Mines	—	—	—	4,050	—	—	—
Water power	—	—	—	—	—	396	201
Other	—	—	—	2,500	—	—	—
Northern development	—	—	—	—	—	—	—
New Brunswick — Quebec power intertie	—	—	—	2,500	—	—	—
Okanagan flood control	—	—	—	—	—	—	—
Total, natural resources	1,482	37	109	6,821	—	405	204
Agriculture, trade and industry, and tourism							
Agriculture	428	11,673	1,640	7,931	14,919	5,450	6,654
Agriculture and rural development	365	11,515	1,240	7,607	13,938	4,889	5,747
Crop insurance	—	20	17	—	920	398	867
4-H Clubs	4	4	9	3	19	68	15
Land surveying and mapping	59	130	368	317	—	—	—
Assistance re livestock shipments to the Royal Winter Fair	—	2	1	1	3	—	12
Rabies control	—	—	—	1	4	39	—
Farm labour agreements	—	2	5	2	35	56	13
Trade and industry	33,487	—	10,215	26,605	24,511	—	1,628
Total, agriculture, trade and industry, and tourism	33,915	11,673	11,855	34,536	39,430	5,450	8,282
Environment							
Water purification and supply	—	—	—	—	15	—	—
Recreation and culture	—	—	—	—	—	—	5,000
Recreational facilities	—	—	—	—	—	—	—
Labour, employment and immigration	—	—	—	—	—	—	—
Immigration	28	13	54	38	472	1,237	123
Housing	—	—	—	—	—	—	—
General assistance	872	—	—	—	—	—	—
Total, specific purpose transfers	120,775	37,717	99,366	119,420	349,680	931,580	154,518
Total, transfers to provincial governments and territories	225,588	60,714	196,828	204,615	1,100,384	975,162	214,071
LOCAL GOVERNMENTS							
General purpose transfers							
Grants in lieu of taxes	253	204	4,070	—	10,517	26,235	3,058
Other	—	—	—	700	—	—	—
Total, general purpose transfers	253	204	4,070	700	10,517	26,235	3,058
Specific purpose transfers							
Protection of persons and property							
Other	—	—	—	—	—	75	—
Transportation and communications	113	—	46	48	2,265	5,696	615
Air	93	—	46	47	316	269	440
Road	20	—	—	1	1,949	5,353	175
Other	—	—	—	—	—	74	—
Education							
Primary and secondary	85	—	—	—	357	1,282	1,089
Environment							
Sewage collection and disposal	103	18	309	34	2,846	4,287	211
Housing							
General assistance	1,324	—	675	2,336	7,787	10,902	1,064
Total, specific purpose transfers	1,625	18	1,030	2,418	13,255	22,242	2,979
Total, transfers to local governments	1,878	222	5,100	3,118	23,772	48,477	6,037
Total, transfers to provincial governments, territories and local governments	227,466	60,936	201,928	207,733	1,124,156	1,023,639	220,108

20.4 Transfers by the federal government to provincial governments, territories and local governments, year ended Mar. 31, 1971 (thousand dollars) (continued)

Payee and purpose	Province or territory						
	Sask.	Alta.	BC	All provinces	YT	NWT	Canada
PROVINCIAL GOVERNMENTS AND TERRITORIES							
General purpose transfers							
Statutory subsidies	2,144	3,008	1,673	31,794	—	—	31,794
Federal estate tax	3,622	7,336	—	60,382	—	—	60,382
Federal corporation income tax on privately owned public utilities	23	6,023	512	23,896	180	40	24,116
Equalization	42,123	—260	—	927,036	—	—	927,036
Established programs (Interim Arrangements Act)	—	—	—	185,618	—	—	185,618
Grants in lieu of taxes	—	—	51	1,835	—	—	1,835
Other	—	—	—	—	5,742	28,682	34,424
Total, general purpose transfers	47,912	16,107	2,236	1,230,561	5,922	28,722	1,265,205
Specific purpose transfers							
General government							
Other	597	865	1,039	50,155	—	—	50,155
Protection of persons and property							
Other (civil emergency measures)	127	234	309	4,482	—	18	4,500
Transportation and communications	1,388	1,401	2,560	44,690	9	—	44,699
Air	—	—	—	—	9	—	9
Road							
Trans-Canada Highway	1,263	916	1,869	39,573	—	—	39,573
Railway Grade Crossing Fund	125	485	691	5,117	—	—	5,117
Health							
Hospital care	44,082	82,651	95,668	733,516	729	1,533	735,778
Hospital insurance and diagnostic services	43,982	82,521	95,475	732,064	729	1,530	734,323
Professional training	100	130	193	1,452	—	3	1,455
Medical care	24,211	43,013	53,434	438,657	—	—	438,657
Health Resources Fund	1,730	4,860	1,290	37,500	—	—	37,500
Medical rehabilitation and crippled children	11	79	209	660	—	—	660
Medical Care Act	22,470	38,074	51,935	400,497	—	—	400,497
Preventive services	1,244	1,359	1,805	15,238	26	49	15,313
General public health	474	608	787	6,830	—	49	6,879
Tuberculosis control	34	57	77	743	8	—	751
Mental health	243	309	402	3,082	18	—	3,100
Cancer control	—	—	—	385	—	—	385
Child and maternal health	—	129	46	610	—	—	610
Public health research	493	256	493	3,588	—	—	3,588
Total, health	69,537	127,023	150,907	1,187,411	755	1,582	1,189,748
Social welfare							
Assistance to disabled, handicapped, unemployed and other needy individuals	21,403	40,692	69,949	401,775	838	495	403,108
Old age assistance	—10	—16	—13	—159	—	—1	—160
Blind persons allowances	39	165	286	1,608	2	20	1,630
Disabled persons allowances	666	1,188	1,331	8,806	3	15	8,824
Canada Assistance Plan	20,621	39,284	68,207	390,394	833	416	391,643
Other	87	71	138	1,126	—	45	1,171
Other	163	419	—	5,694	21	21	5,736
Total, social welfare	21,566	41,111	69,949	407,469	859	516	408,844
Education							
Primary and secondary	—	—	2,459	3,459	133	—	3,592
Post-secondary	28,838	55,473	35,327	557,768	—	800	558,568
Capital assistance in providing training facilities (Adult Occupational Training Act)	13,766	1,404	19,863	169,499	—	800	170,299
Post-secondary education	15,072	54,069	15,464	388,269	—	—	388,269
Other	6	8	29	6,324	—	—	6,324
Canada Student Loans Act	—	—	—	5,350	—	—	5,350
Language texts for citizenship classes	1	8	—	110	—	—	110
Citizenship and language instructions for immigrants	5	—	29	864	—	—	864
Total, education	28,844	55,481	37,815	567,551	133	800	568,484
Natural resources							
Fish and game	—	—	264	1,482	—	—	1,482
Assistance in construction of fishing vessels	—	—	264	1,314	—	—	1,314
Relocating families from isolated fishing areas	—	—	—	168	—	—	168
Forests	—	—	—	693	—	—	693
Mines	—	—	—	4,050	—	—	4,050
Water power	—	—	905	1,502	—	—	1,502
Other	—	—	44	2,544	—	13,686	16,230
Northern development	—	—	—	—	—	13,686	13,686
New Brunswick—Quebec power intertie	—	—	—	2,500	—	—	2,500
Okanagan flood control	—	—	44	44	—	—	44
Total, natural resources	—	—	1,213	10,271	—	13,686	23,957
Agriculture, trade and industry, and tourism							
Agriculture	2,485	4,942	2,081	58,203	—	—	58,203
Agriculture and rural development	2,125	3,855	1,819	53,100	—	—	53,100
Crop insurance	324	1,022	250	3,818	—	—	3,818
4-H Clubs	19	17	10	168	—	—	168
Land surveying and mapping	—	—	—	874	—	—	874
Assistance re livestock shipments to the Royal Winter Fair	13	14	—	46	—	—	46
Rabies control	2	—	—	46	—	—	46
Farm labour agreements	2	34	2	151	—	—	151

20.4 Transfers by the federal government to provincial governments, territories and local governments, year ended Mar. 31, 1971 (thousand dollars) (concluded)

Payee and purpose	Province or territory						
	Sask.	Alta.	BC	All provinces	YT	NWT	Canada
PROVINCIAL GOVERNMENTS AND TERRITORIES (concluded)							
Trade and industry	627	723	—	97,796	—	—	97,796
Total, agriculture, trade and industry, and tourism	3,112	5,665	2,081	155,999	—	—	155,999
Environment							
Water purification and supply	—	—	—	15	420	10	445
Recreation and culture	—	—	—	5,000	45	23	5,068
Recreational facilities	—	—	—	5,000	45	23	5,068
Labour, employment and immigration	58	210	271	2,504	4	12	2,520
Housing	—	—	—	872	20	3	895
General assistance	—	—	—	872	20	3	895
Total, specific purpose transfers	125,229	231,990	266,144	2,436,419	2,245	16,650	2,455,314
Total, transfers to provincial governments and territories	173,141	248,097	268,380	3,666,980	8,167	45,372	3,720,519
LOCAL GOVERNMENTS							
General purpose transfers							
Grants in lieu of taxes	1,442	2,792	3,935	52,506	98	408	53,012
Other	—	—	—	700	—	—	700
Total, general purpose transfers	1,442	2,792	3,935	53,206	98	408	53,712
Specific purpose transfers							
Protection of persons and property							
Other	—	—	—	75	—	—	75
Transportation and communications	352	875	1,212	11,222	14	20	11,256
Air	168	165	497	2,041	14	20	2,075
Road	184	710	715	9,107	—	—	9,107
Other	—	—	—	74	—	—	74
Education							
Primary and secondary	1,224	1,340	—	5,377	—	—	5,377
Environment							
Sewage collection and disposal	101	248	140	8,297	—	—	8,297
Housing							
General assistance	52	467	1,350	25,957	—	—	25,957
Total, specific purpose transfers	1,729	2,930	2,702	50,928	14	20	50,962
Total, transfers to local governments	3,171	5,722	6,637	104,134	112	428	104,674
Total, transfers to provincial governments, territories and local governments	176,312	253,819	275,017	3,771,114	8,279	45,800	3,825,193

20.5 Assets and liabilities of the federal government, as at Mar. 31, 1970 and 1971 (million dollars)

Item	1970 ^r	1971 ^r	Item	1970 ^r	1971 ^r
Assets			Liabilities		
Cash on hand or on deposit	483	774	Payables	4,732	5,186
Receivables	269	277	Loans and advances	134	253
Loans and advances	14,825	17,715	Treasury bills	2,895	3,735
Investments	9,253	10,370	Canada Savings Bonds	6,579	7,805
Other assets	646	882	Other bonds	13,439	13,662
Total, assets	25,476	30,018	Other liabilities	3,913	4,526
			Total, liabilities	31,692	35,166

20.6 Gross bonded debt of the federal government, average interest rate, term of issue and place of payment as at Mar. 31, 1970-72

Item		1970	1971	1972
Bonded debt	\$'000	19,742,140	21,466,156	23,428,500
Average interest rate	%	5.87	6.31	6.21
Average term of issue	yr	21.65	11.81	11.49
Place of payment				
Canada	\$'000	19,295,185	21,129,039	23,093,112
New York	"	265,003	263,273	261,544
Federal Republic of Germany	"	73,844	73,844	73,844
Italy	"	108,108	—	—

20.7 Guaranteed debt of the Government of Canada as at Mar. 31, 1971 (thousand dollars)

Item	Amount of guarantee authorized	Amount outstanding at Mar. 31, 1971
Railway securities guaranteed as to principal and interest		
Canadian National 3¾% due Feb. 1, 1974	200,000	200,000
Canadian National 2¾% due June 15, 1975, US\$6,000,000 ¹	6,000	6,000
Canadian National 5% due May 15, 1977	77,077	77,077
Canadian National 4% due Feb. 1, 1981	300,000	300,000
Canadian National 5¾% due Jan. 1, 1985	89,980	89,980
Canadian National 5% due Oct. 1, 1987	143,256	143,256
Grand Trunk Western Railroad Company	5,400	5,400
Total, railway securities	821,712	821,712
Other outstanding guarantees and contingent liabilities		
Loans made by lenders under Part IV of the National Housing Act, 1954 for home extension and improvements ²	30,000	22,839
Insured loans made by approved lenders under the National Housing Act 1954 ³	16,000,000	9,225,000
Liability for insurance and guarantees under the Export Development Act	1,150,000	615,191
Loans made by chartered banks under the Farm Improvement Loans Act	204,114	83,034
Loans made by chartered banks and credit unions under the Fisheries Improvement Loans Act	3,700	2,583
Loans made by chartered banks under the Small Businesses Loans Act	34,588	17,863
Loans made by chartered banks and credit unions under the Canada Student Loans Act ⁴	535,637	485,237
Loans made by chartered banks to the Canadian Wheat Board	725,000	327,048
Loans made by lenders under the Regional Development Incentives Act and the Regional Economic Expansion Act	1,652	1,652
Loans made by lenders under the Cape Breton Development Act	100,000	30,000
Loans made by lenders under the General Adjustment Assistance Program	250,000	17,199
Total, guaranteed debt	19,856,403	11,649,358
Loans made by approved lending institutions under National Housing Act prior to 1954	Unstated	Indeterminate
Guarantees to owners of returns from moderate rental housing projects ⁵	Unstated	Indeterminate

¹ Liability is subject to exchange rate in effect June 15, 1975.² As at Dec. 31, 1971.³ As reported (in accordance with Section 45, National Housing Regulations) by approved lenders as at Dec. 31, 1971.⁴ Includes contingent liability in respect of alternative payments to non-participating province.⁵ As at Dec. 31, 1971, funds totalling \$6,504,237 were held by the Central Mortgage and Housing Corporation for the purpose of settling claims. In 1971, rental contracts totalled \$4,288,000.**20.8 Summary of the public debt and interest payments thereon, years ended Mar. 31, 1968-72**

Year ended Mar. 31	Gross debt \$'000,000	Net active assets \$'000,000	Net debt \$'000,000	Net debt per capita ¹ \$	Increase or decrease in net debt during year \$'000,000	Interest paid on debt \$'000,000	Interest paid per capita ² \$
1968	32,924	16,164	16,760	807.93	795	1,270	62.23
1969	35,919	18,583	17,336	823.13	576	1,443	69.54
1970	38,150	21,207	16,943	792.59	393	1,676	79.57
1971	42,976	25,653	17,322	798.97	379	1,780	83.25
1972	47,724	29,787	17,937	831.63	614	1,964	89.95

¹ Based on the official estimates of population for June 1 of the year indicated.² Based on the official estimates of population for June 1 of the year immediately preceding the one indicated.**20.9 Revenue collected (net of refunds) by the Department of National Revenue, Taxation, years ended Mar. 31, 1968-72 (thousand dollars)**

Year ended Mar. 31	Income tax ¹ Individual ²	Corporation	Special refundable tax	Total	Estate tax	Total collections
1968	5,471,589	1,987,547	39,111	7,498,247	102,192	7,600,439
1969	6,323,872	2,416,851	-94,462	8,646,261	112,377	8,758,638
1970	7,910,444	3,080,001	-102,658	10,887,787	100,631	10,988,418
1971	9,097,603	2,653,286	-35,083	11,715,806	119,835	11,835,641
1972	10,372,651	2,664,602	-1,699	13,035,554	132,016	13,167,570

¹ Includes old age security tax and provincial income tax collected by the Department of National Revenue, Taxation.² Includes non-resident withholding tax and Canada Pension Plan contributions by employers, employees and self-employed persons; from 1969 includes social development tax; 1972 includes unemployment insurance premiums.

20.10 Number of taxpayers and amounts of income and tax, by selected cities, 1969 and 1970

City and province	1969			1970		
	Taxpayers	Total income assessed \$'000,000	Federal tax payable ¹ \$'000,000	Taxpayers	Total income assessed \$'000,000	Federal tax payable ¹ \$'000,000
Brantford, Ont.	31,773	187.1	23.2	30,837	190.1	24.3
Calgary, Alta.	160,968	1,044.8	137.6	168,582	1,151.4	156.3
Dartmouth, NS	21,369	125.2	14.6	23,466	141.7	17.3
Edmonton, Alta.	188,225	1,195.8	153.6	195,196	1,297.9	173.0
Guelph, Ont.	25,593	155.8	19.4	26,167	172.5	22.8
Halifax, NS	54,347	329.5	41.0	55,738	355.2	46.2
Hamilton, Ont.	191,370	1,245.1	159.8	197,499	1,390.4	189.1
Hull, Que.	40,619	240.8	22.2	44,038	277.8	27.2
Kingston, Ont.	34,181	209.8	26.9	35,166	232.4	31.4
Kitchener - Waterloo, Ont.	81,373	501.6	63.6	83,818	542.4	71.6
London, Ont.	100,353	636.7	82.8	102,600	690.1	93.1
Moncton, NB	24,135	133.9	14.6	24,268	138.7	15.8
Montreal, Que.	833,444	5,289.0	527.0	842,366	5,665.0	584.9
New Westminster, BC	41,286	263.3	32.9	33,636	230.5	30.7
Niagara Falls, Ont.	25,720	155.6	18.2	27,981	177.2	21.5
Oakville, Ont.	22,225	176.4	25.5	24,950	201.3	29.5
Oshawa, Ont.	38,416	261.7	34.2	38,807	260.0	34.3
Ottawa, Ont.	175,001	1,223.6	168.0	185,478	1,381.8	199.9
Peterborough, Ont.	26,591	166.9	21.0	27,394	183.2	23.9
Quebec, Que.	132,617	814.0	76.8	143,879	935.2	92.9
Regina, Sask.	56,503	328.7	39.3	56,005	345.1	42.8
St. Catharines, Ont.	48,734	327.4	41.9	49,506	338.8	44.0
Saint John, NB	32,172	174.6	19.6	32,246	186.5	21.9
St. John's, Nfld.	34,279	195.9	23.3	35,364	213.5	26.6
Sarnia, Ont.	30,211	219.5	29.3	31,094	239.3	33.2
Saskatoon, Sask.	49,159	291.2	34.5	48,377	298.1	36.6
Sault Ste. Marie, Ont.	30,081	191.5	22.8	30,167	216.7	28.6
Sherbrooke, Que.	32,046	179.9	16.0	33,450	198.8	18.7
Sudbury - Copper Cliff, Ont.	50,932	324.5	39.9	56,503	425.5	59.3
Sydney - Glace Bay, NS	31,388	163.8	16.1	33,521	185.9	19.8
Thunder Bay, Ont.	43,553	272.0	33.6	45,398	293.7	37.6
Toronto, Ont.	1,005,370	6,777.4	952.7	1,025,014	7,300.3	1,059.4
Trois-Rivières, Que.	21,418	122.3	10.5	22,798	146.1	13.9
Vancouver, BC	374,670	2,462.8	328.5	375,539	2,602.4	359.7
Victoria, BC	81,816	494.1	60.5	86,483	541.9	68.7
Windsor, Ont.	88,771	618.7	78.0	91,426	675.7	89.6
Winnipeg, Man.	224,644	1,318.0	162.0	231,859	1,434.6	182.9

¹ Includes old age security and social development taxes.**20.11 Number of taxpayers and amounts of income and tax, by occupational class, 1969 and 1970**

Occupational class	1969			1970		
	Taxpayers	Total income assessed \$'000	Federal tax payable ¹ \$'000	Taxpayers	Total income assessed \$'000	Federal tax payable ¹ \$'000
Employees	6,312,038	38,171,494	4,403,596	6,487,048	41,864,630	5,047,669
Farmers	124,482	635,649	55,857	116,084	610,173	55,819
Fishermen	9,115	46,016	4,402	11,635	62,614	6,353
Self-employed professionals						
Accountants	5,092	91,849	17,265	4,853	93,676	18,222
Medical doctors and surgeons	17,940	580,145	136,746	19,347	672,453	165,829
Dentists	5,372	116,964	23,761	5,665	129,126	27,003
Lawyers and notaries	9,088	235,235	53,035	9,304	248,771	57,208
Consulting engineers and architects	2,442	55,217	11,386	2,483	55,582	11,321
Entertainers and artists	6,409	38,993	4,817	7,271	46,871	6,029
Other professionals	12,725	112,543	17,344	13,654	124,708	19,914
Salesmen	21,210	161,679	20,003	21,051	158,054	19,303
Business proprietors	273,776	1,809,082	211,497	275,193	1,824,060	213,324
Investors	234,766	1,522,529	191,612	270,844	1,791,758	235,338
Property owners	60,494	388,442	51,835	66,523	430,165	57,273
Pensioners	256,569	890,116	68,477	316,921	1,094,897	89,990
All others	12,445	55,460	5,889	13,855	58,620	6,322
Total	7,363,963	44,911,412	5,277,523	7,641,731	49,266,158	6,036,921

¹ Includes old age security and social development taxes.**20.12 Individual income tax statistics, by income class, 1969 and 1970**

Income class based on total income		Taxpayers		Total income assessed		Federal tax payable		Average federal tax ¹	
		1969	1970	1969 \$'000	1970 \$'000	1969 \$'000	1970 \$'000	1969 \$	1970 \$
Under \$2,000		767,097	758,066	1,151,250	1,153,214	34,334	34,488	45	45
\$2,000 and under \$3,000	\$3,000	895,280	868,765	2,247,669	2,175,599	122,036	118,351	136	136
\$3,000 " \$5,000	\$5,000	1,888,500	1,823,209	7,506,527	7,262,131	611,338	604,728	324	332
\$5,000 " \$7,000	\$7,000	1,597,983	1,571,583	9,536,332	9,376,301	975,924	987,495	611	628

20.12 Individual income tax statistics, by income class, 1969 and 1970 (concluded)

Income class based on total income	Taxpayers		Total income assessed		Federal tax payable		Average federal tax ¹	
	1969	1970	1969 \$'000	1970 \$'000	1969 \$'000	1970 \$'000	1969 \$	1970 \$
\$7,000 and under \$10,000	1,387,454	1,555,462	11,449,626	12,896,330	1,376,928	1,579,547	992	1,015
\$10,000 " \$15,000	577,150	756,246	6,807,020	8,929,147	920,237	1,226,512	1,594	1,622
\$15,000 " \$25,000	180,186	227,985	3,313,933	4,168,640	543,945	688,475	3,019	3,020
\$25,000 " \$50,000	56,987	64,998	1,882,843	2,146,026	404,682	465,419	7,101	7,161
\$50,000 and over	13,326	15,417	1,016,210	1,158,769	288,102	331,906	21,620	21,529
Total	7,363,963	7,641,731	44,911,412	49,266,158	5,277,523	6,036,921	717	790

¹ Includes old age security and social development taxes.**20.13 Corporation positive taxable income, by industry group and by size of total assets, 1968-70 (million dollars)**

Asset size and year		Agri- cul- ture, for- estry, oil fishing	Min- ing, quar- rying, oil wells	Manu- fac- turing	Con- struc- tion	Util- ities	Whole- sale trade	Retail trade	Fin- ance, insur- ance, real estate	Ser- vices	Total
Under \$100,000	1968	6.5	4.4	28.7	42.5	14.3	41.2	67.6	61.4	59.9	326.5
	1969	7.5	2.9	29.9	43.8	14.3	44.1	73.0	68.0	66.9	350.4
	1970	7.8	3.1	26.0	41.5	14.9	41.1	72.7	67.1	68.8	342.9
\$100,000 - \$249,999	1968	11.5	2.8	56.1	53.2	17.0	66.0	77.4	71.4	54.7	410.1
	1969	11.8	3.3	59.6	56.6	18.8	72.6	83.5	85.8	61.4	453.3
	1970	11.9	3.0	58.0	53.0	19.6	73.0	84.1	85.3	64.1	452.1
\$250,000 - \$999,999	1968	14.1	8.2	181.2	68.7	29.0	144.0	65.9	100.8	67.1	679.0
	1969	17.6	8.2	192.9	68.0	33.4	162.3	70.1	123.9	75.1	751.5
	1970	17.5	7.0	175.0	68.4	31.2	166.5	73.5	123.5	81.9	744.6
\$1,000,000 - \$4,999,999	1968	3.7	13.6	411.6	58.1	54.7	159.3	48.4	77.5	45.6	872.5
	1969	4.6	14.7	466.0	56.8	66.2	178.2	50.5	98.7	50.5	986.2
	1970	5.0	13.8	427.3	52.7	69.8	179.4	45.1	93.7	51.9	938.8
\$5,000,000 and over	1968	11.5	204.6	1,888.6	81.6	419.8	194.3	209.6	538.8	52.3	3,601.1
	1969	10.5	221.9	2,060.3	70.8	436.9	174.9	222.6	836.7	68.2	4,102.7
	1970	6.4	313.8	1,688.4	46.5	481.4	185.0	235.0	855.9	67.8	3,880.1
Total, taxable income	1968	47.3	233.6	2,566.2	304.1	534.8	604.8	468.9	849.9	279.6	5,889.3
	1969	51.9	251.0	2,808.7	296.0	569.6	632.1	499.7	1,213.0	322.1	6,644.0
	1970	48.7	340.6	2,374.7	262.1	617.0	645.0	510.3	1,225.5	334.5	6,358.4

20.14 Federal and provincial income taxes payable by corporations, by industrial division, 1968-70¹ (million dollars)

Income taxes and year		Agri- cul- ture, for- estry, oil fishing	Min- ing, quar- rying, oil wells	Manu- fac- turing	Con- struc- tion	Util- ities	Whole- sale trade	Retail trade	Fin- ance, insur- ance, real estate	Ser- vices	Total
Federal taxes payable	1968	9.9	73.0	992.8	74.4	203.5	181.4	127.6	258.0	65.0	1,985.6
	1969	10.9	99.7	1,071.7	74.5	214.4	191.5	143.2	399.9	84.2	2,289.9
	1970	11.0	139.6	910.9	60.6	239.3	198.6	146.9	398.5	96.6	2,202.0
Provincial taxes payable	1968	4.2	20.0	293.7	32.4	59.8	67.4	50.9	90.5	29.3	648.2
	1969	5.1	26.5	313.1	31.9	62.0	69.5	54.8	126.2	34.5	723.8
	1970	5.0	37.9	271.6	28.5	70.5	72.4	55.4	127.7	39.5	708.6
Total	1968	14.1	93.1	1,286.4	106.8	263.3	248.8	178.5	348.5	94.3	2,633.8
	1969	16.1	126.2	1,384.8	106.4	276.5	261.0	198.0	526.1	118.7	3,013.7
	1970	16.0	177.5	1,182.5	89.2	309.8	271.0	202.3	526.2	136.1	2,910.6

¹ As declared on corporate income tax return before assessment.**20.15 Excise taxes collected, by commodity, years ended Mar. 31, 1970-72 (thousand dollars)**

Commodity	1970	1971	1972
Sales tax ¹	1,716,899	1,707,501	1,984,707
Other excise taxes			
Cigarettes, tobacco and cigars	295,845	319,414	330,121
Jewellery, watches, ornaments, etc.	10,394	10,190	11,142
Matches and lighters	1,093	1,101	1,231
Television sets, radios, tubes and phonographs	40,764	38,556	10,190
Toilet preparations	19,755	21,430	22,037
Wines	6,991	8,064	9,373
Sundry commodities	2,560	4,001	1,875
Interest and penalties	2,176	2,093	3,439
Less refunds and drawbacks	-1,155	-1,626	-997
Total	2,095,323	2,110,724	2,373,117

¹ Net after deduction of refunds and drawbacks; excludes tax credited to the old age security fund.

20.16 Conditional grants and shared-cost programs as at December 1972

Department and project	Year established	Basis of provincial apportionment of federal funds	Provinces participating ¹	Provincial share ² %	Maximum limitation on grant ³	Federal contribution 1971-72 ⁴ \$'000
AGRICULTURE						
Freight assistance on livestock shipments to Royal Winter Fair	1946	Extent of provincial programs	9 (Ont.)	25	O	63
4-H Club activities	1900	Extent of provincial programs	10	50	O	170
Crop insurance	1961	Extent of provincial programs	8 (Nfld., NB)	0-50 of admin. costs	O	4,034
Compensation — rabies control	1959	Incidence of disease	7 (NB, Que., Ont.)	60	O	41
Barber's graduation	1964	Extent of provincial programs	Que., Ont.	50	F	—
Grants to special fairs	1957	Flat grant	Nfld., NB	5	F	—
CENTRAL MORTGAGE AND HOUSING CORPORATION						
Urban renewal	1944	Project cost	10	50 ⁵	O	23,734
Public housing	1940	Project losses	10	25 or 50 ⁵	O	6,498
Sewage treatment projects	1960	Work completed	10	75 ⁵	O	23,718
EMERGENCY MEASURES						
Population	1952	Population	10	25-50 ⁵	F	2,981
ENERGY, MINES AND RESOURCES						
Water conservation	1938	Estimated construction costs	Ont.	37 1/2-62 1/2	F	404
Greater Winnipeg Floodway, etc.	1962	Estimated cost	Man., NB, BC	25-62 1/2	F	60
Flood control	ad hoc	Extent of provincial programs		100-10	O	1,863
ENVIRONMENT						
Relocation — fishing families	1967	Extent of provincial program	Nfld.	—	O	684
FINANCE						
Canada student loans — service fees	1965	Grant per eligibility certificate	9 (Que.)	6	O	479
— interest	1965	Que. ratio (age group 18-25)	Que.	7	O	9,106
INDIAN AFFAIRS AND NORTHERN DEVELOPMENT						
Welfare services to Indians	1960	Specified in each agreement	Nfld., Ont., Man., Sask., Alta.	0-50	varies	4,039
MANPOWER AND IMMIGRATION						
Agricultural manpower	1941	Specified in agreement	9 (Nfld.)	50	F	153
Vocational rehabilitation of disabled persons	1953	Extent of provincial programs	9 (Que.)	50	O	1,495
Technical and vocational training	1945	\$800 per capita (age group 15-16 as of 1961 Census)		50	F	75,588
Capital contribution	1971	Extent of federal program	10	—	O	156,684
OCCUPATIONAL TRAINING						
NATIONAL HEALTH AND WELFARE						
National health grants	1948	Flat grant and population	10	6	F	1,435 ⁸
Professional training	1948	Flat grant and population	10	6	F	1,380 ⁸
Mental health	1948	Flat grant, population and TB deaths	10	6	F	1,488 ⁸
Tuberculosis control	1948	Based on research needs	10	6	F	4,551
Public health research	1948	Flat grant and population	9 (Man.)	50	F	176 ⁸
Cancer control	1948	Flat grant and population	10	7	F	3,487 ⁸
General public health	1948	Flat grant, provincial infant birth and death ratio	10	6	F	152 ⁸
Child and maternal health	1953	Flat grant and population	10	50 ⁹	F	375 ⁸
Medical rehabilitation and crippled children	1953-48	\$300 million on basis of population				
Health Resources Fund	1966	\$175 million by federal government				
		\$25 million on agreement of Atlantic Provinces	10	50	F	37,000

20.16 Conditional grants and shared-cost programs as at December 1972 (concluded)

Department and project	Year estab- lished	Basis of provincial apportionment of federal funds	Provinces participating ¹	Provincial share ² %	Maximum limitation on grants ³	Federal contribution 1971-72 ⁴ \$'000
Hospital insurance	1958	Population eligible for hospitalization × (25% of average national per capita costs + 25% of average provincial per capita costs)	10	10	O	1,216,443
Medicare	1968	Average number insured × 50% of average per capita costs of participating provinces	10	10	O	575,547
Old age assistance	1952	Needy population (age group 65-66)	10	50	O	-274 ¹¹
Blind persons allowances	1937	Needy blind population (age group 18-65)	10	25	O	1,786
Disabled persons allowances	1954	Needy disabled population (age group 18-65)	10	50	O	5,068
Unemployment assistance	1955	Needy unemployed	Que., Ont., Alta.	50	O	-4,530 ¹¹
Canada Assistance Plan	1966	Individuals in need	10	50	O	729,039
Fitness and amateur sport	1962	Flat grant and population	9 (Que.)	40	F	281
National welfare grants	1962	} Based on need Estimated cost	10	{ 50 ⁵ 6	{ F O	192
Demonstration projects	1947		NS, Que., Ont.			29
Hospitalization and welfare of indigent immigrants						
PUBLIC WORKS						
Trans-Canada Highway	1950	Provincial mileage and extent of provincial programs	10	10-50	O	2,338
Matane-Gaspé North Highway	1965	Mileage contribution	Que. BC	50	F	648
Okanagan flood control	1950	Estimated cost		50	O	47
REGIONAL ECONOMIC EXPANSION						
Agricultural and Rural Development (ARDA)	1962	Extent of agreed programs	10	50	O	14,518
Fund for Rural Economic Development (FRED)	1966	Specified in agreements	PEI, NB, Que., Man. 7 (PEI, Ont., BC)	6	F	52,460
Special areas and highways	1970	Specified in agreements	Man.	6	F	94,834
Shellmouth Dam	1962	Estimated cost	Man.	50	O	171
Prairie Farm Rehabilitation Act (PFRA)	1950	Irrigated lands	Alta.	6	O	181
SECRETARY OF STATE						
Immigrants, language						
Instruction	1951	Estimated cost	9 (Que.)	50	O	383
Text books	1963	Estimated cost	9 (Que.)	—	O	120
Bilingualism	1970	Number of minority language student equivalents × 15½% of provincial average instruction costs per student	10	10	O	73,318
TRANSPORT						
Railway Grade Crossing Fund	1909	Approved construction	10	12½-15 ⁶	F	5,370
Trunk highways	1965	Project cost	Atlantic	25-50	O	26,385

¹ Provinces excepted are shown in parentheses.² As here used, 50% may mean the province must contribute 50% of the cost of the project or must match the federal contribution.³ F = a maximum limit set to the federal share; and O = federal and provincial shares are open-ended.⁴ Source: *Public accounts of Canada*, 1972.⁵ Represents the provincial and/or municipal share.⁶ Provinces to provide administration, services, facilities, land, loans or to undertake a specific portion of the project, etc.⁷ Provinces to maintain existing level of expenditures or to bear residuary costs.⁸ Quebec under the Established Programs (Interim Arrangements) Act received \$3,003,000 for these programs.⁹ Share for provision of services only.¹⁰ Not uniform.¹¹ Recovery.

20.17 Gross general revenue and expenditure of provincial and territorial governments, year ended Mar. 31, 1970 (thousand dollars)

Source or function	Province or territory						
	Nfld.	PEI	NS	NB	Que.	Ont.	Man.
Gross general revenue by source							
Income tax							
Individuals	19,347	3,359	38,852	34,122	814,888	762,086	81,226
Corporations	9,463	1,364	13,047	10,126	181,878	441,038	31,687
General sales tax	37,171	6,761	60,074	52,180	531,542	645,284	67,932
Motor fuel tax	19,782	5,382	37,312	29,215	281,409	394,585	44,311
Health services premiums						475,631	45,088
Other provincial taxes	6,264	2,064	3,422	31,863	249,748	229,632	19,910
Privileges, licences and permits	15,521	1,630	14,757	15,251	217,445	283,342	27,087
Liquor profits	5,470	2,723	23,680	17,551	75,250	137,200	23,936
Non-tax receipts from own sources	15,339	6,901	37,279	16,220	101,486	304,636	44,644
Conditional transfers from other levels of government	78,333	19,632	98,527	79,884	167,605	707,691	107,414
Unconditional transfers from other levels of government	97,066	18,033	96,695	84,487	528,774	40,237	51,077
Total	303,756	67,849	423,645	370,899	3,150,025	4,421,362	544,312
Gross general expenditure by function							
General government	11,812	4,292	13,393	13,382	127,199	117,290	15,075
Protection of persons and property	8,233	1,365	8,516	6,842	139,350	183,995	15,644
Transportation and communications	53,220	12,288	63,372	46,661	314,799	479,625	52,487
Health	64,707	11,556	117,553	71,013	822,358	1,175,452	149,747
Social welfare	41,428	7,156	30,523	26,313	470,819	239,988	37,277
Education	78,091	17,793	115,572	132,333	958,536	1,401,410	148,408
Natural resources and primary industries	12,083	1,869	15,206	19,281	143,639	108,916	35,561
Debt charges (exclusive of debt retirement)	33,805	7,599	54,742	28,726	139,945	250,840	33,005
Unconditional transfers to other levels of government	2,798	543	7,442	14,732	143,449	63,022	10,453
All other expenditure	20,866	3,717	19,024	12,778	81,914	245,385	18,250
Total	327,043	68,178	445,343	372,061	3,342,008	4,265,923	515,907
Gross general revenue by source	Sask.	Alta.	BC	YT	NWT	Canada	
Income tax							
Individuals	63,915	134,042	190,606	—	—	2,142,443	
Corporations	22,529	63,967	86,507	—	—	861,606	
General sales tax	64,670	—	209,571	—	—	1,675,185	
Motor fuel tax	47,520	80,367	76,986	1,470	1,514	1,019,853	
Health services premiums	18,564	50,063	67,905	—	—	657,251	
Other provincial taxes	10,454	18,999	48,754	921	559	622,590	
Privileges, licences and permits	53,899	299,173	209,535	669	640	1,138,949	
Liquor profits	20,110	45,167	61,741	1,281	2,150	416,259	
Non-tax receipts from own sources	77,108	102,837	112,249	1,419	2,754	822,872	
Conditional transfers from other levels of government	109,426	200,196	203,542	5,395	18,370	1,796,015	
Unconditional transfers from other levels of government	16,526	17,553	2,424	6,810	10,368	970,050	
Total	504,721	1,012,364	1,269,820	17,965	36,355	12,123,073	
Gross general expenditure by function							
General government	15,548	26,923	44,869	2,220	11,765	403,768	
Protection of persons and property	14,379	38,861	38,262	948	2,613	459,008	
Transportation and communications	71,212	96,770	171,720	5,470	1,659	1,369,283	
Health	142,543	287,149	333,839	2,367	4,576	3,182,860	
Social welfare	35,422	75,978	105,300	1,168	2,176	1,073,548	
Education	128,079	316,362	273,106	7,408	7,677	3,584,775	
Natural resources and primary industries	26,411	58,167	61,528	74	668	483,403	
Debt charges (exclusive of debt retirement)	44,004	55,031	21,209	892	1,873	671,671	
Unconditional transfers to other levels of government	—	36,834	44,346	413	83	324,115	
All other expenditure	21,415	38,646	84,977	1,401	8,163	556,536	
Total	499,013	1,030,721	1,179,156	22,361	41,253	12,108,967	

20.18 Liabilities of provincial and territorial governments as at Mar. 31, 1969 and 1970 (thousand dollars)

Province or territory and year	Short-term bank loans and over-drafts	Payables	Loans and advances	Treasury bills	Savings bonds	Bonds and debentures	Notes	Deposits and other liabilities	Total
Nfld.	1969 30,545	1,116	8,144	9,750	—	440,316	725	287	490,883
	1970 21,854	3,463	9,239	4,388	—	507,995	11	1,542	548,492
PEI	1969 4,075	4,796	3,529	14,750	—	79,539	—	6,043	112,732
	1970 5,242	4,594	4,254	15,576	—	86,159	—	6,658	122,483
NS	1969 972	48,397	—	—	—	701,142	18,750	34,535	803,796
	1970 2,351	53,428	4,597	—	—	806,749	8,000	34,804	909,929
NB	1969 36,311	36,466	4,149	—	—	446,262	—	15,104	538,292
	1970 14,167	41,652	2,843	5,000	—	458,883	—	9,677	532,222
Que.	1969 15	272,559	198,699	66,000	174,725	1,791,923	—	137,537	2,641,458
	1970 30	297,834	245,048	53,000	158,402	2,074,515	—	144,967	2,973,796
Ont.	1969 3,826	51,186	126,452	—	—	3,896,111	—	544,845	4,622,420
	1970 2,794	62,052	143,983	—	—	4,498,015	192	578,417	5,285,453

20.18 Liabilities of provincial and territorial governments as at Mar. 31, 1969 and 1970 (thousand dollars) (concluded)

Province or territory and year	Short-term bank loans and over-drafts	Payables	Loans and advances	Treasury bills	Savings bonds	Bonds and debentures	Notes	Deposits and other liabilities	Total
Man. 1969	—	50,038	30,521	81,276	21,613	324,264	8,850	19,539	536,101
1970	—	69,724	27,624	36,985	11,395	452,694	8,850	37,885	645,157
Sask. 1969	—	44,833	39,699	19,000	36,959	695,861	—	3,636	839,988
1970	241	33,083	36,290	13,000	20,224	714,173	—	3,290	820,301
Alta. 1969	—	49,088	4,509	—	—	767,059	26,000	9,804	856,460
1970	992	67,518	4,041	—	—	871,608	39,000	16,465	999,624
BC 1969	—	69,283	8,503	—	—	365,608	—	15,780	459,174
1970	—	74,158	7,558	—	—	414,261	—	—	495,977
YT 1969	—	912	14,440	—	—	—	—	645	15,997
1970	—	1,590	20,699	—	—	—	—	867	23,156
NWT 1969	—	2,769	16,810	—	—	—	—	285	19,864
1970	—	5,301	21,005	—	—	—	—	929	27,235
Canada 1969	75,744	631,443	455,455	190,776	233,297	9,508,085	54,325	788,040	11,937,165
1970	47,671	714,397	527,181	127,949	190,021	10,885,052	56,053	835,501	13,383,825

20.19 Liabilities guaranteed by provincial and territorial governments¹ as at Mar. 31, 1969 and 1970 (thousand dollars)

Province or territory and year	Bonds and debentures	Bank loans	Other	Total
Newfoundland 1969	134,968	35,120	44,877	214,965
1970	155,535	40,031	71,983	267,549
Prince Edward Island 1969	14,391	5,312	409	20,112
1970	11,212	3,429	398	15,039
Nova Scotia 1969	10,537	26,724	47	37,308
1970	39,335	9,775	21	49,131
New Brunswick 1969	278,702	5,726	—	284,429
1970	289,353	7,234	—	296,587
Quebec 1969	2,529,526	86,960	248,043	2,864,529
1970	2,701,583	129,111	162,220	2,992,914
Ontario 1969	1,859,292	38,969	213,400	2,111,661
1970	1,909,216	31,373	224,000	2,164,589
Manitoba 1969	649,804	—	4,000	653,804
1970	668,392	—	5,000	673,392
Saskatchewan 1969	18,299	26	49,042	67,367
1970	17,952	3,598	48,967	70,517
Alberta 1969	291,425	3,021	6,339	300,785
1970	353,044	11,555	6,285	370,884
British Columbia 1969	1,965,615	130	5,000	1,970,745
1970	2,105,708	99	—	2,105,807
Northwest Territories 1969	—	—	—	—
1970	—	135	—	135
Canada 1969	7,752,559	201,988	571,158	8,525,705
1970	8,251,330	236,340	518,874	9,006,544

¹ Excludes liabilities of provincial government special funds guaranteed by provincial governments but considered as provincial government liabilities.

20.20 Bonds and debentures, by market¹, of provincial governments outstanding as at Mar. 31, 1969 and 1970 (thousand dollars)

Province and year	Domestic	Foreign		International	Total
		Traditional	Europe		
		United States			
Newfoundland 1969	297,551	110,504	32,261	—	440,316
1970	330,553	99,474	53,809	24,159	507,995
Prince Edward Island 1969	70,839	8,700	—	—	79,539
1970	77,529	8,630	—	—	86,159
Nova Scotia 1969	372,836	315,806	—	12,500	701,142
1970	386,440	407,809	—	12,500	806,749
New Brunswick 1969	334,476	111,786	—	—	446,262
1970	343,131	105,752	—	10,000	458,883
Quebec 1969	1,633,561	195,000	86,067	52,020	1,966,648
1970	1,785,036	245,000	139,721	63,160	2,232,917
Ontario 1969	3,026,092	756,626	104,191	9,202	3,896,111
1970	3,447,524	941,779	104,190	4,522	4,498,015
Manitoba 1969	255,877	90,000	—	—	345,877
1970	260,023	175,000	29,066	—	464,089
Saskatchewan 1969	470,892	227,800	34,128	—	732,820
1970	481,444	227,800	25,153	—	734,397
Alberta 1969	626,770	135,708	—	4,581	767,059
1970	718,832	149,513	—	3,263	871,608
British Columbia 1969	185,427	157,681	—	22,500	365,608
1970	237,593	154,168	—	22,500	414,261
Total 1969	7,274,321	2,109,611	256,647	100,803	9,741,382
1970	8,068,105	2,514,925	351,939	140,104	11,075,073

¹ Includes savings bonds.

20.21 Details of gross revenue of local governments, fiscal years ended nearest Dec. 31, 1969 (thousand dollars)

Source	Province or territory						
	Nfld.P	PEI	NS	NB	Que.	Ont.	Man.
Taxes, general and school							
Real property	6,205	6,693	61,755	12,296	684,188 ¹	1,237,219	122,078
Business	2,494	738	2,777	—	51,640	165,380	8,937
Other	2,197	296	3,611	66	168,704	30,974	7,894
Total, taxes	10,896	7,727	68,143	12,362	904,532	1,433,573	138,909
Sales and services	2,210	602	6,123	6,056	29,461	124,384	15,999
Other revenue from own sources	2,283	437	8,124	1,953	68,144	102,786	20,495
Total, gross revenue from own sources	15,389	8,766	82,390	20,371	1,002,137	1,660,743	175,403
Conditional transfers from:							
Federal government	—	60	4,031	1,769	2,812	22,298	614
Provincial governments	1,960	9,149	76,954	1,235	639,317	1,033,401	122,018
Total, conditional transfers	1,960	9,209	80,985	3,004	642,129	1,055,699	122,632
Unconditional transfers							
From governments							
Federal grants in lieu of taxes	209	83	3,534	—	3,008	23,166	3,195
Other	2,674	20	—	—	238	—	—
Provincial grants in lieu of taxes	—	—	777	—	1,839	3,703	2,875
Other	—	512	3,785	14,469	123,473	54,249	7,303
From government enterprises ²							
Federal	128	—	2,599	—	4,220	5,732	1,059
Provincial	—	—	1,762	—	417	11,967	2,176
Total, unconditional transfers	3,011	615	12,457	14,469	133,195	98,817	16,608
Total, transfers	4,971	9,824	93,442	17,473	775,324	1,154,516	139,240
Gross general revenue	20,360	18,590	175,832	37,844	1,777,461	2,815,259	314,643
	Sask.	Alta.	BC	YT	NWT	Canada	
Taxes, general and school							
Real property	139,942	211,445	300,643	291	838	2,783,593	
Business	9,662	11,596	8,386	—	67	261,677	
Other	11,688	19,184	26,815	43	54	271,526	
Total, taxes	161,292	242,225	335,844	334	959	3,316,796	
Sales and services	17,613	36,837	41,900	284	262	281,731	
Other revenue from own sources	18,861	48,533	35,284	141	296	307,337	
Total, gross revenue from own sources	197,766	327,595	413,028	759	1,517	3,905,864	
Conditional transfers from:							
Federal government	843	1,044	3,036	—	—	36,507	
Provincial governments	90,014	184,434	276,199	296	1,117	2,436,094	
Total, conditional transfers	90,857	185,478	279,235	296	1,117	2,472,601	
Unconditional transfers							
From governments							
Federal grants in lieu of taxes	1,631	3,092	3,051	94	325	41,388	
Other	53	1	—	—	—	2,986	
Provincial grants in lieu of taxes	656	5,065	648	—	92	15,655	
Other	—	34,093	—	219	—	238,103	
From government enterprises ²							
Federal	107	—	904	—	—	14,749	
Provincial	2,214	27	2,567	—	—	21,130	
Total, unconditional transfers	4,661	42,278	7,170	313	417	334,011	
Total, transfers	95,518	227,756	286,405	609	1,534	2,806,612	
Total general revenue	293,284	555,351	699,433	1,368	3,051	6,712,476	

¹ Includes \$52,458,000 special taxes, and \$422,500,000 for school tax revenue.² Grants are mostly in lieu of taxes.

20.22 Details of gross expenditure of local governments, fiscal years ended nearest Dec. 31, 1969 (thousand dollars)

Function	Province or territory						
	Nfld.P	PEI	NS	NB	Que.	Ont.	Man.
General government services	3,475	344	8,298	3,148	108,357	104,979	27,520
Protection of persons and property	1,424	787	13,027	9,458	144,294	216,140	20,069
Public works	5,199	1,191	10,402	11,871	191,579	403,146	35,135
Sanitation and waterworks	4,191	980	15,827	11,132	144,231	196,747	20,176
Health	6	1	12,061	46	8,986	65,610	5,038
Social welfare	4	42	11,717	29	6,117	114,889	5,108
Education (excl. debenture debt charges)	900	14,373	99,808	64	1,001,909 ¹	1,569,558	164,265
Recreation and community services	1,026	149	4,098	4,107	56,283	113,147	11,469
Debt charges	2,955	1,325	10,616	3,923	198,819 ²	163,588	17,187
Own enterprises	443	—	95	—	—	22,305	5,386
Provision for reserves	108	322	1,727	118	5,362	33,540	5,323
Other expenditure	906	383	7,240	1,665	45,115	71,354	42
Gross general expenditure (cost of services provided)	20,637	19,897	194,916	45,561	1,911,052	3,075,003	316,718

20.22 Details of gross expenditure of local governments, fiscal years ended nearest Dec. 31, 1969 (thousand dollars) (concluded)

Function	Province or territory					
	Sask.	Alta.	BC	YT	NWT	Canada
General government services	11,633	19,112	26,917	191	355	314,329
Protection of persons and property	16,578	44,553	58,034	238	128	524,730
Public works	45,318	92,095	71,512	382	575	868,405
Sanitation and waterworks	18,224	50,274	62,527	305	548	525,162
Health	13,973	30,277	7,448	16	23	143,485
Social welfare	2,412	7,574	58,033	—	—	205,925
Education (excl. debenture debt charges)	158,329	315,184	359,269	—	916	3,684,575
Recreation and community services	9,991	28,960	33,111	68	503	262,912
Debt charges	16,296	38,644	39,220	34	80	492,687
Own enterprises	1,152	2,430	3,124	—	—	34,935
Provision for reserves	5,038	2,589	16,638	19	2	70,786
Other expenditure	2,578	6,875	3,731	27	33	139,949
Gross general expenditure (cost of services provided)	301,522	638,567	739,564	1,280	3,163	7,267,880

¹ School expenditure for Quebec is estimated.² School debenture interest in Quebec estimated at \$77 million.**20.23 Debt of local governments, fiscal years ended nearest Dec. 31, 1969 (thousand dollars)**

Direct and indirect debt	Province or territory						
	Nfld. ¹	PEI	NS	NB	Que. ²	Ont.	Man.
Direct debt (less sinking funds)							
Debtenture debt	25,554	17,159	157,627	64,009	2,327,203	3,420,713	330,300
Less sinking funds	141	3,660	4,342	2,691	4,413	330,210	35,573
Net debtenture debt	25,413	13,499	153,285	61,318	2,322,790	3,090,503	294,727
Temporary loans and bank overdrafts	19,540*	1,728	44,645	11,598	156,203	207,234	75,849
Accounts and other payables	21,985	761	14,905	5,497	138,888	151,344	16,908
Other liabilities	6,172	128	8,566	2,178	121,437	40,623	18,968
Total, direct debt less sinking funds	73,110*	16,116	221,401	80,591	2,739,318	3,489,704	406,452
Indirect debt (less sinking funds)							
Debtenture debt	271,797	858,086	777,091	791	1,513	8,251,843	—
Less sinking funds	29,490	6,151	74,103	—	—	490,774	—
Net debtenture debt	242,307	851,935	702,988	791	1,513	7,761,069	—
Temporary loans and bank overdrafts	15,012	21,647	28,482	4	439	582,381	—
Accounts and other payables	17,889	46,675	35,660	117	816	451,445	—
Other liabilities	10,877	24,782	16,192	44	339	250,306	—
Total, direct debt less sinking funds	286,085	945,039	783,322	956	3,107	9,045,201	—

¹ Newfoundland data for 1968 (1969 data not available).² Data for Quebec schools not available. Includes \$37,299,000 debentures of the Montreal Transportation Commission guaranteed by the City of Montreal.**20.24 Personal income tax payable on various levels of income, 1972 (dollars)**

Status	Income ¹	Federal income tax ²	Provincial income tax ³
Single taxpayer — no dependants	1,600	—	—
	2,000	56	18
	2,500	140	44
	3,000	227	71
	5,000	599	188
	8,000	1,235	388
	10,000	1,705	536
	20,000	4,756	1,495
	50,000	16,241	5,107
	100,000	38,580	12,131
Married taxpayer — no dependants	3,000	—	—
	4,000	157	49
	5,000	336	106
	8,000	935	294
	10,000	1,379	434
	20,000	4,297	1,351
	50,000	15,677	4,929
	100,000	37,964	11,937
Married taxpayer — two children under age 16	4,000	54	17
	5,000	225	71
	8,000	813	256
	10,000	1,248	392
	20,000	4,093	1,287
	50,000	15,427	4,851
	100,000	37,690	11,851

¹ It is assumed that all income is from salary or wages and all taxpayers take the standard deduction of \$100 and the employment expense deduction. No account has been taken of other deductions such as for child care expenses, unemployment insurance contributions or the additional old age deduction.² Federal tax is for income earned in any province except Quebec. The special 3% reduction in 1972 has been taken into account.³ The provincial income tax is calculated at 30.5% of federal tax otherwise payable (i.e., before the special reduction of 3% for 1972). Some provinces impose tax at a rate higher than 30.5%.

20.25 Special excise taxes levied as at Dec. 31, 1972

Item	Tax
Cigarettes	3¢ per 5 cigs.
Cigars	17½% ad valorem
Pipe tobacco, cut tobacco, snuff	90¢ per lb.
Jewellery, including articles of ivory, amber, shell, precious or semi-precious stones, clocks, watches, goldsmiths' and silversmiths' products, except gold-plated or silver-plated ware for the preparation or serving of food or drink	10% ad valorem
Lighters	10¢ per lighter
Playing cards	20¢ per pack
Slot machines — coin, disc or token-operated games or amusement devices	10% ad valorem
Matches	10% ad valorem
Tobacco, pipes, cigar and cigarette holders and cigarette rolling devices	10% ad valorem
Toilet articles, including cosmetics, perfumes, shaving creams, antiseptics, etc.	10% ad valorem
Wines ¹	
Wines of all kinds containing not more than 7% absolute alcohol by volume	25¢ per gal
Non-sparkling wines containing more than 7% absolute alcohol by volume but not more than 40% proof spirit	50¢ per gal
Sparkling wines	\$2.50 per gal
Wines (additional excise taxes) ²	
Wines of all kinds containing not more than 7% absolute alcohol by volume	2½¢ per gal
Wines of all kinds containing more than 7% absolute alcohol by volume	5¢ per gal
Insurance premiums paid to British or foreign companies not authorized to transact business in Canada or to non-resident agents of authorized British or foreign companies	10% of net premium for property surety, fidelity and liability insurance. (Most other kinds of insurance are exempt.)

All the foregoing items, except insurance premiums, are also subject to the general sales tax of 12%. Cigarettes, cigars and tobacco are subject to additional taxes under the Excise Act (referred to as excise duties).

¹ These taxes apply only to wines manufactured in Canada. The customs tariff on wines includes a levy on imported wines to correspond to the taxes on domestic production.

² These taxes apply to both domestic and imported wines.

Sources

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20.7 - 20.8 *Public accounts of Canada*.

20.9 - 20.12 Statistics Section, Systems and Planning Branch, Department of National Revenue, Taxation.

20.13 - 20.14 Business Finance Division, General Statistics Branch, Statistics Canada. *Corporation taxation statistics*, Cat. No. 61-208.

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Chapter 21

Selected economic indicators

In this chapter various statistical statements and studies are presented in which broad areas of Canadian economic activity are covered in a comprehensive but summary form. The chapter is based on the Canadian System of National Accounts (SNA), which consists of national income and expenditure accounts, indexes of real domestic product, the balance of international payments, and financial flows. Input-output tables are also part of the System of National Accounts, but have not been included in this analysis. The integrated aggregative economic accounts provide an interrelated framework for analysis of the Canadian economy and its relationship with other countries. In its broad outline, the Canadian System of National Accounts bears a close relationship to the international standard as described in the United Nations publication *A system of national accounts*. To complete the economic picture, a section on price indexes is also included.

21.1 National income and expenditure

National income and expenditure accounts provide accounting summaries for the nation as a whole and portray economic activity in terms of transactions taking place between major groups of transactors, namely, governments, corporate and government business enterprises, persons and unincorporated businesses and non-residents. By combining and summarizing these operations into their various classes, information may be obtained on the functioning of the economy which is of particular interest to governments concerned with problems of unemployment, taxation and prices, and to businessmen concerned with programs of investment and marketing.

Tables 21.1-21.9 are based on the revised historical series of the national income and expenditure accounts. Coverage since 1926 is available in Statistics Canada occasional publication *Canadian statistical review, historical summary 1970* (Catalogue No. 11-505). A special publication of a complete set of historical tables is in preparation and may be ordered from the Gross National Product Division of Statistics Canada.

National income. Net national income at factor cost measures the current earnings of Canadian factors of production (land, labour and capital) from productive activity. It includes wages and salaries, profits, interest, net rent and net income of farm and non-farm unincorporated business.

Gross national product (GNP), by totalling all costs arising in production, measures the market value of all final goods and services produced in the current period by Canadian factors of production. It is equal to national income plus net indirect taxes (indirect taxes less subsidies), plus capital consumption allowances and miscellaneous valuation adjustments.

Personal income is the sum of current receipts of income whether or not these receipts represent earnings from production. It includes transfer payments from government (such as family allowances, unemployment insurance benefits and war service gratuities) in addition to wages and salaries, net income of farm and non-farm unincorporated business, interest, dividends and net rental income of persons. It does not include undistributed profits of corporations and other elements of the national income not paid out to persons.

Gross national expenditure (GNE) measures the same aggregate as gross national product, namely, total production of final goods and services at market prices, by tracing the disposition of production through final sales to persons, to governments, to business on capital account (including changes in inventories) and to non-residents (exports). Imports of goods and services, including payments of interest and dividends to non-residents, are deducted since the purpose is to measure only Canadian production.

21.1.1 Economic activity in 1972

A second year of brisk economic activity, supported by continuing strong domestic demand, carried the gross national product over the \$100,000 million mark in 1972. Preliminary estimates indicate the same real rate of growth of 5.8% as in 1971, in spite of certain adverse factors including a number of work interruptions and a decline in agricultural production. The output growth was accompanied by the largest employment gains since 1969,

although almost equally large increases in the labour force prevented the unemployment rate from falling significantly. The expansion of production was accompanied by renewed price pressure.

Gross national product at market prices rose by 10.7% in 1972 to reach a level of \$103.407 million. This advance, the largest since 1966, compared with a 9.1% increase in 1971. Nearly half of the dollar gain reflected higher prices, particularly evident in the food, construction and some merchandise exports components of demand, rather than rising volume of production. The rise in the implicit price index for GNP of 4.6% compared with a rise of 3.1% in 1971 and of 4.6% and 4.4% in the inflationary years 1970 and 1969, respectively.

In a continuing climate of expansionary fiscal and monetary policies, the forces of demand and production in 1972 generally followed the pattern of the previous year. Consumer outlays accelerated sharply in both years, in line with unusually strong growth in personal disposable income which was again boosted by record increases in transfer payments in 1972. Housing outlays continued very strong as did government current expenditure, while increases in business investment on plant and equipment remained relatively modest. Domestic demand again outpaced production in 1972, resulting in a further deterioration in the balance of transactions in goods and services with non-residents, from a reduced surplus in 1971 to a deficit in 1972. Highlighting the income side in both years were very sharp increases in corporation profits and accelerated rises in labour income.

Although the economy has been growing strongly in the last two years, the quarterly distribution of the gains has been rather erratic. In 1972, the strength of demand was largely concentrated in the second and in the fourth quarters, which showed volume gains of 1.9% and 2.9%, respectively. These gains were in especially sharp contrast to the marginal increase of 0.2% shown by the third quarter estimate. Much of the volatility in aggregate demand was apparently due to merchandise exports, which were affected by strikes at home and abroad and by other work interruptions and to the uneven pace of consumer purchases of durable goods, especially automobiles.

21.1.2 Consumer demand

In 1972, consumers spent \$6,288 million more on goods and services than in 1971 — an increase of 11.6%. This was greatly in excess of any gain recorded in the 1960s and compared with a 7.8% increase in 1971. Even after removing the effect of increasing prices — up 3.5% after a small 2.2% increase in 1971 — the volume gain of 7.8% was the strongest since 1955. This upsurge in consumer spending was very widely based as all major categories of personal expenditure showed unusually high rates of increase, ranging from 9.7% for services to 16.1% for durable goods. The goods categories as a whole showed a 12.9% increase. The growth in consumer outlays, spectacular as it was, fell short of the 11.8% growth in personal disposable income, resulting in a small increase in the already historically high personal saving ratio (personal saving as a proportion of personal disposable income) from 7.6% to 7.7%.

As in the previous year, expenditure on durable goods paced the advance, but the gains within that group were much more widespread in 1972. Expenditure on new passenger cars continued to increase strongly, up 15.5% after a 27.0% increase in 1971; most other durable goods showed sharp rises, in particular, furniture and household appliances, in line with the continuing boom in new housing. Widespread increases in expenditure were noted in semi-durable goods, up 12.3%, and in non-durable goods, up 11.7%. In the latter group, a 13.0% increase in food outlays was due largely to sharp price rises.

21.1.3 Government demand

Government current spending on goods and services rose by 11.1%, about the same rate as in 1971. The major increases took place at the provincial and local levels and reflected mainly higher wage and salary payments, including substantial retroactive amounts. The increase in capital outlays of governments, on the other hand, was much smaller than in 1971.

Increases in government transfer payments to persons, mainly at the federal level, had a sharp expansionary effect on the economy. Unemployment insurance benefits more than doubled in 1972.

21.1.4 Business fixed capital outlays

The housing sector, supported by continuing favourable financing conditions, was another factor contributing strongly to the current economic expansion. Housing starts realized a new record at almost 250,000 units. Outlays rose by 17.5% in 1972, following a 26.2%

increase in the previous year. However, much of the increase in 1972 reflected sharp price increases, especially of lumber. The increase in the volume of residential construction as measured in constant dollars rose by 9.1% compared with 18.9% in 1971. The increase in 1972 was concentrated in the construction of single dwellings, in contrast to the previous year when apartment construction contributed almost equally to the expansion.

In contrast to housing, the increase in business plant and equipment spending remained relatively modest in 1972. These outlays rose by 6.5% compared with 7.7% in 1971. Spending on non-residential construction, affected by strikes, slowed considerably from a 10.5% increase in 1971 to 2.9% in 1972. This represented a decline in real terms. Spending on machinery and equipment, on the other hand, rose by 9.9%, the highest increase of the last three years. Outlays on commercial vehicles, passenger vehicles for business use, farm implements and non-farm imported machinery were especially strong.

21.1.5 Inventory investment

The rate of investment in non-farm business inventories rose from \$202 million to \$764 million. This was the first such increase in this investment since 1969. For the year as a whole, the major part of the investment was concentrated in dealer holdings of durable goods. Although stocks of manufacturers increased moderately, the stock-to-shipments ratio in 1972 was much below the ratio of the preceding year. Over one third of the investments in non-farm business inventories took place in the first quarter of the year.

21.1.6 Exports and imports

In the external sector, both exports and imports of goods and services in total rose at accelerated rates; however, the faster rate of increase in imports resulted in a sharp deterioration in the balance from a surplus of \$177 million in 1971 to a deficit of \$808 million. Most of the swing occurred in the merchandise account. Although merchandise exports rose by 11.9% — almost twice the rate of the previous year — merchandise imports rose even faster, by 19.6%.

Among exports, notable increases were recorded in crude petroleum and lumber. In imports, there were notable increases in machinery and equipment, in line with strong rises in this type of investment. An extended shutdown of a major automobile plant in Canada in the third quarter to change its product line also contributed to the swing of the merchandise balance.

21.1.7 Incomes

Most income components displayed sizable gains in 1972. Labour income, which accounts for over half of GNP, rose by \$5,518 million, or 10.7%, to a level of \$56,849 million. This was the largest percentage increase since 1969 and compared with gains of less than 10.0% in the two previous years. The acceleration was due entirely to widespread sharp increases in the service-producing industries, especially in trade, up 12.8% compared with 8.4% in 1971, and in public administration, up 14.9%, about the same as in the previous year. The growth of wages and salaries in the goods-producing industries, up 8.3% compared with 8.5% in 1971, was slowed by industrial disputes in construction and mining. However, wages and salaries in manufacturing rose by 9.9% — a significant acceleration over the previous two years and slightly above the rate recorded in 1969.

Preliminary estimates of corporation profits indicate an increase of about 21.0%. This gain, the largest since 1955, occurred following an already sizable increase of 16.2% in 1971. Although industrial detail is not yet available, there are indications that the gains were widespread. As a proportion of GNP, corporation profits declined to low levels in 1969 and 1970, but sharp gains in 1971 and 1972 re-established this proportion at 10.5%, only slightly less than that of 10.7% in 1968. A larger proportion of the increase in business income in the last two years reflected sharp gains in inventory valuation due to rising prices. The inventory valuation adjustment, a negative correction to GNP in periods of rising prices, to remove that part of the increased value of stocks not due to current production, rose sharply in the last two years.

21.1.8 Price movements

The implicit price index of gross national expenditure rose 4.6% for the year, a considerable acceleration from the 3.1% experienced in 1971. The implicit price index for personal expenditure rose by 3.5% compared with 2.2% in 1971. This acceleration stemmed

mainly from food prices, which were 8.0% higher in the year, the largest rate of increase in over a decade. This was reflected in a jump in the implicit price index for non-durable goods from a 1.7% increase in 1971 to a 5.1% increase in 1972. In other categories, the most important price acceleration occurred in semi-durables, from 1.9% to 2.7%. In durable goods, an accelerated rise in the price of furniture was largely offset by a moderation in the rate of increase of car prices.

Prices of exports which had risen marginally in 1971 rose by 2.9% in 1972. The majority of components of the merchandise price index accelerated, with particularly sharp rises in prices of food and lumber products. Most metals, on the other hand, showed price deceleration. The service component, which has a lower weight in the over-all price index, rose by a strong 6.0%. The price rise in the import index of 2.6% remained moderate, due in large part to price moderation in the United States following the adoption of price control measures.

The implicit price for current government expenditure rose 7.4% over the year, higher than the 5.8% 1971 increase. The increase of the wage component of 9.0% contributed most to this price rise. Higher retroactive payments in 1972 included in this item resulted in an acceleration in the price rise compared to 1971; however, strike effects in the second quarter offset the impact of these wage settlements.

The implicit price index for business gross fixed capital formation rose 5.0%, but this upward pressure on prices was concentrated in construction prices as the machinery and equipment component, reflecting its high import content, rose a modest 2.5%, a lesser rate than in 1971.

With continued strong demand, residential construction prices rose 7.7%, an acceleration from the 6.1% increase in 1971, while non-residential construction prices, where there was relatively weak demand, advanced 6.1%, the same as 1971. Labour prices rose at decelerated rates compared to 1971, so that the main impetus behind the surge in prices was due to higher material costs. The 15.2% increase in lumber prices boosted residential material prices to the highest level of the decade.

21.1.9 The government sector

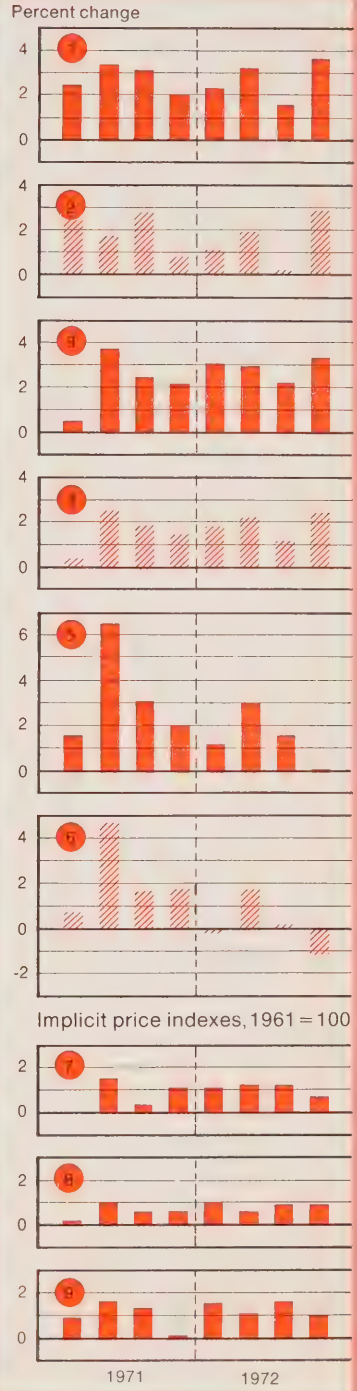
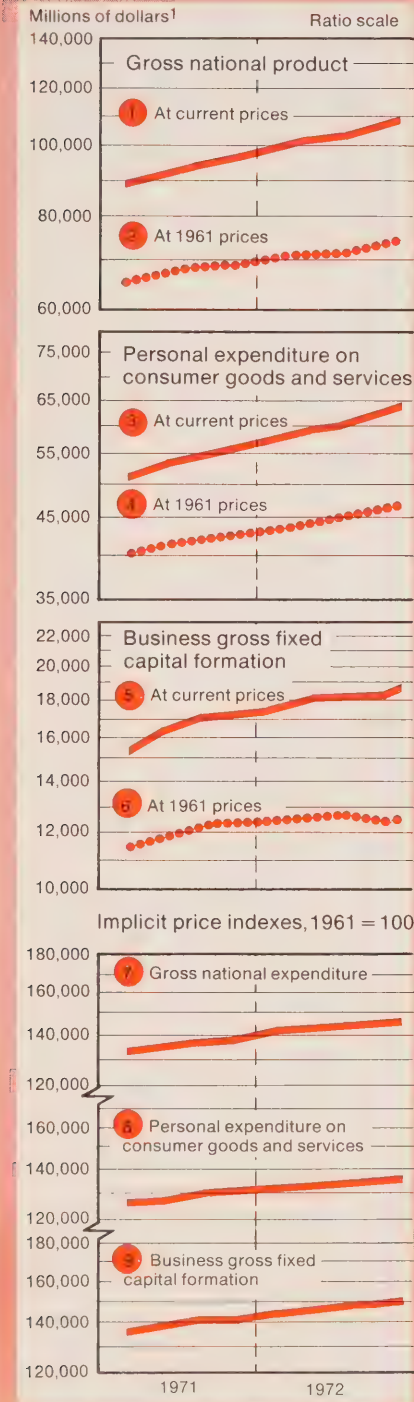
Total expenditure of all levels of government combined (excluding intergovernmental transfers) rose by 13.0% in 1972, which was about the same rate as in the previous year. Increased outlays on goods and services contributed the largest amount to the increase and reflected mainly higher wage and salary payments, including substantial retroactive amounts. Current outlays rose at about the same rate as in 1971. Increases in capital outlays, which were considerably smaller in 1972 than in 1971, were of similar magnitude at the federal and provincial levels.

The other major increase in expenditures occurred in transfer payments to persons. The rise, the highest in some years, was concentrated at the federal level. Unemployment insurance benefits paid were more than double those in 1972 under the effect of the introduction of new unemployment insurance legislation and the continuing high levels of unemployment. Other factors in the rise of federal transfers to persons were higher old age security pension rates and the introduction of the Local Initiatives Program. The increase at the provincial level was the lowest in some years as the rate of increase in grants to post-secondary educational institutions slowed and property tax credits replaced cash basic shelter grants within the income tax system.

Total revenues rose by just under 11.0% in 1972, about the same as the 1971 rate of increase. Returns from personal direct taxes and indirect taxes contributed about equally to the increase. The increase in personal direct taxes was slightly lower than in the previous year, reflecting tax rate cuts made at both the federal and provincial levels. Indirect taxes rose much more sharply than in the previous year, reflecting higher sales and some increased rates. All other revenue categories showed gains with the exception of other current transfers from persons, which declined, due mainly to the elimination of hospital and medical care premiums for the aged in Ontario.

With expenditures rising more sharply than revenues, the government sector, on a national accounts basis and including the Canada and Quebec Pension Plans, moved from a surplus of \$100 million in 1971 to a deficit of \$634 million in 1972. The deficits of the federal, provincial and local governments all widened during the year. The surplus of the Canada and Quebec Pension Plans rose from \$1,278 million to \$1,374 million, an increase similar to those of recent years.

Selected indicators—seasonally adjusted



1. At annual rates.

21.2 Domestic product by industry

21.2.1 Indexes of real domestic product

Since the early 1960s Statistics Canada has published a set of production data pertaining to the entire spectrum of Canadian industries in its full industry detail (including the index of industrial production). These data, in the form of production indexes, are measures of value added for each industry revalued in the dollars of the base year. Technically, they are termed "indexes of real domestic product (RDP) at factor cost originating by industry". In constructing the index for total RDP, where the gross output of one industry flows to another industry (intermediate input) and/or to final demand (non-industrial sales), the portion double-counted has been eliminated. This is accomplished by subtracting the intermediate inputs (materials, fuels, advertising, etc.) valued in terms of the dollars of a common base year from the constant dollar value of the gross output to yield a constant dollar value added aggregate.

RDP indexes are published on an annual, a quarterly and a monthly basis. The monthly and quarterly data are published both seasonally adjusted and without seasonal adjustment. The seasonally adjusted data are considered to be preferable for the analysis of emerging trends, as the strong seasonal fluctuations to which sub-annual data are frequently subject have been removed through the seasonal adjustment process, thus revealing the underlying trend as well as the cyclical and irregular factors affecting the data. In general, the annual indexes are suitable for studies of production trends, growth rates and inter-industry comparisons, whereas monthly indexes provide a much better tool for the study of the cyclical behaviour of industries and short-term changes in production.

Recent performance. Spurred on by strong domestic and foreign demand for the goods and services produced by Canadian industries throughout most of the decade since 1961, total real output in the 1961-72 period achieved an average annual rate of gain of 5.7% in contrast to the average rate of growth of 4.7% in the 1946-61 period. Domestic demand has been influenced by demographic factors operating since World War II; younger age groups are displaying both their purchasing power and changing tastes. Buoyant foreign demand for Canadian commodities has been a dominant force since 1961, with sales of wheat and motor vehicles and parts having recorded the most dramatic gains over the past eleven years. Within this period a generally healthy investment climate has prevailed. Both residential and non-residential construction made good gains. However, in the case of non-residential construction, the rapid pace of activity peaked in 1966 and various inhibiting factors have contributed to weakness in this industry since then. The durable manufacturing sector was particularly dynamic in response to both domestic and external demands.

The influx of the postwar generation is also reflected in the rapid increase in the labour force. Over most of the period, the expanding economy generated sufficient employment opportunities to adequately absorb the increases in the labour force. Some slackness in the over-all economy developed in the latter part of the 1960s with the result that, among other things, the growth in labour force employment has tended to fall below the rate of increase in the labour force itself.

The rate of growth of the economy decelerated in 1970, but picked up in 1971. The momentum was reasonably sustained in 1972. Real domestic product increased by 5.3% in 1972, following a rise of 5.7% in 1971. Such rates of growth still exceed the long-term growth rate for the postwar period (Table 21.10).

Manufacturing and, in particular, durable goods manufacturing, has been a leading contributor to the growth of the Canadian economy over most of the period. The burgeoning motor vehicles and motor vehicle parts industries have been prime movers in the rapid increase in the output of durables. A severe interruption in the strong upward trend in motor vehicle production occurred early in 1966 and persisted until the final quarter of 1966. It has been variously attributed to changes in the general economic conditions in North America and specifically to the 1966 credit squeeze and the upward climb of prices, combined with consumer concern about car safety. Since 1968, production has been hit, directly or indirectly, by strikes and parts shortages, and in 1970 output declined markedly as a result of a slump in consumer spending compounded by the impact of the automobile strike in the latter part of the year. There was a strong recovery early in 1971 which raised the level for the year well above that for 1969 (Table 21.11). This industry made further good gains in 1972 despite an

interruption in the second half of the year to permit a major producer to alter its product lines.

The performance of the construction industry has been a conspicuous feature of the economy. Heavy injections of industrial capital took place in the mid-1960s to develop additional facilities or expand capacity. Pace-setters were such industries as petroleum and coal products, chemicals, pulp and paper, and electric power. Outlays for social capital such as hospitals and educational institutions also increased. Construction projects for Canada's Centennial and Expo 67 provided an extra stimulus. However, since 1967, tightened monetary conditions, rising costs, a mid-1969 decision to defer capital-cost allowances on commercial projects in some areas, and strikes in 1969, 1970 and 1972, all restrained output in this sector. Residential construction tends to be one of the more volatile sectors of the economy. The relevant demographic factors have indicated that a solid demand for housing exists. However, less favourable supply conditions such as scarcity of mortgage funds and rising interest rates and construction costs have, from time to time, adversely affected residential construction, particularly in 1966, the latter half of 1969 and the first half of 1970. Strikes in 1970 and, to a lesser extent in 1972, exacerbated the situation. However, increased availability of both private and public mortgage funds in the latter part of 1970 prompted a sharp upswing. This strong advance continued in 1971 and 1972, providing an impetus for increasing growth in other sectors of the economy.

The community, business and personal services group has grown at a fairly steady pace in the past decade, tending to be relatively insensitive to short-term fluctuations, and has thus been one of the sustaining forces in the economy. The rate of increase in output of this industry grouping in 1970 outstripped that of the aggregate output of the economy, paced by such industries as health and welfare, education and services to business management. In 1971 and 1972, with the general acceleration in business activity, the traditional growth industries again outpaced the increase in this industry group.

The slowdown in the 1970 growth rate of total real domestic product occurred during the first three quarters of the year. The pick-up in activity in the final quarter was highlighted by the resurgence in residential construction which mitigated the impact of the automobile strike.

In summary, since the end of 1970 total production has increased strongly. At the aggregate level, there was renewed strength in domestic demand. Exports of some significant commodities were lower, dampening production in such export-oriented industries as metal mines and pulp and paper in 1971. Newsprint exports increased in 1972 for the first time since 1969. On the other hand, exports of wheat, coal, crude petroleum and natural gas, among others, continued to increase strongly. In 1972, the service-producing industries, on the strength of a 6.0% gain, accounted for the greater part of the change in aggregate real domestic product, led by trade, finance, insurance and real estate, and transportation. The increase in trade was shared by both wholesale and retail trade. Within retail trade, there was particularly strong demand for the goods and services of motor vehicle dealers, department stores, and furniture, TV and radio stores. Within goods, there was considerable strength in manufacturing industries, whose output rose at a rate exceeding that of the service-producing industries, as did the output of electric power, gas and water utilities. The gains in manufacturing were fairly evenly attributable to both durables and non-durables manufacturing. Residential construction recorded a solid gain in 1972, with housing starts up by 7.0%. This followed the burst of activity in 1971 when housing starts had posted a 23.0% increase. The advance in residential construction activity in 1972 provided support for the production of building materials and household appliances, as reflected in the gains in such manufacturing industries as wood products, concrete products, cement and major appliances.

21.2.2 Value added for goods-producing industries

The data contained in this Section are published in Statistics Canada report *Survey of production* (Catalogue No. 61-202); data on census value added in selected industries on a "total activity" basis appear in the Appendix to the 1970 issue. The scope of the survey of production is limited to industries engaged chiefly in the production of goods and it measures production in current dollars. This is in contrast to the real domestic product series which encompasses all industries and measures production in terms of the dollars of a base year — the "constant dollar" calculation.

Tables 21.12 and 21.13 give "census value added" production data, classified by province and industry, respectively, on a primary activity basis. Census value added is derived by

deducting the cost of materials from the gross value of production (excluding excise and other sales taxes) or revenue. The 1960 Standard Industrial Classification of establishments is the basis of classification in the survey of production.

Current dollar census value added in the goods-producing industries increased by 2.1% in 1970, compared to the 9.1% annual increase recorded in 1969. Most of the slowdown was caused by a 0.4% decline in manufacturing.

21.2.3 Aggregate productivity trends

The level of, and changes in, productivity have a vital influence on economic growth, over-all cost-structure, international competitiveness and, in the final analysis, on the quality of life. In the measurement of productivity, output is related to one or more kinds of inputs utilized in the production process.

Although these measures of productivity relate output to a single input only, namely labour time, it must be emphasized that changes in output per unit of labour input cannot be attributed directly and solely to labour. Such measures reflect not only changes in the skills and effort of the labour force but also the contribution of other productive resources with which labour works as well as the effectiveness with which all are combined and organized for the purpose of production. In other words, changes in technology, capital investment, capacity utilization, work flow, managerial skills and labour-management relations each have a bearing on movements in what is termed "labour productivity".

Sources of data. The output components of the various indexes of output per unit of labour input referred to here are the indexes of "real domestic product (RDP) by industry". These indexes, which were developed within the conceptual framework of the Canadian System of National Accounts and which measure in constant dollar terms the unduplicated contribution of each component industry to total output, are considered basically suitable for productivity measurement when matched with the corresponding input measures.

The major sources for the employment and man-hour indexes were the monthly labour force and employment surveys, and these were supplemented by data from such sources as the annual censuses of manufactures and mining and the decennial census of population. Since the data from these diverse sources varied considerably in their coverage, concepts and methods of compilation, care had to be exercised in their selection, adaptation and combination into aggregate measures of labour input which would be conceptually and statistically consistent, both internally and in relation to the output data. Labour force survey data were used for the paid worker estimates of agriculture and of fishing and trapping, while those for manufacturing and mining were based on adjusted annual census data. Estimates for most of the remaining industry divisions were derived from employment survey data. Estimates of other than paid workers (own-account workers, employers and unpaid family workers) were derived mainly from the labour force survey. Estimates of average hours worked, which were needed for the indexes of output per man-hour, were also based on labour force survey data, except in the case of manufacturing, where man-hours data reported in the census of manufactures were also utilized. Indexes of output per person employed in commercial industries for 1946-72 are given in Table 21.14.

Growth rates. Between 1961 and 1972, output per person employed in the commercial industries increased at an average annual rate of 3.4%. Output per man-hour rose at a faster rate, 4.2%, due to a decrease in the length of the average work week (Table 21.15). During the past twelve years the rate of productivity increase has fallen off. The annual growth of 3.8% in output per person employed during the 1961-66 period dropped to 3.2% between 1966 and 1972. Corresponding rates for output per man-hour were 4.5% and 4.2%.

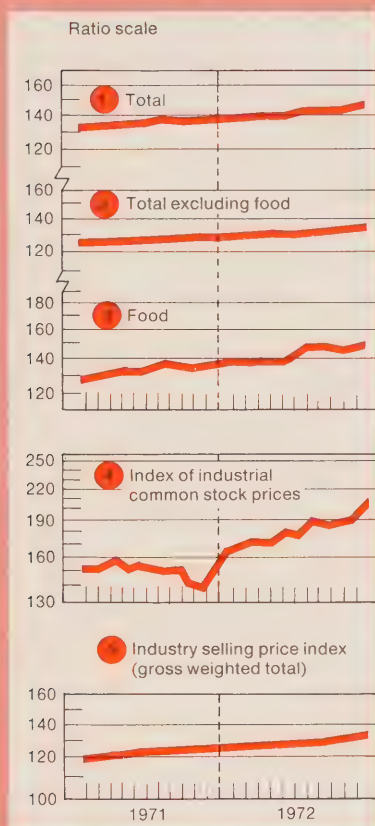
Productivity growth in the commercial service-producing industries continued to lag behind the comparable rate of increase in the goods-producing industries. From 1961 to 1972, the average annual rate of increase in output per person employed was 1.9% in the service sector and 4.7% in the goods sector. During the same period, output per man-hour increased 2.9% and 5.4%, respectively. In manufacturing, from 1961 to 1972 output per person rose 4.1% annually, while the growth in output per man-hour was 4.3%.

21.3 Price indexes

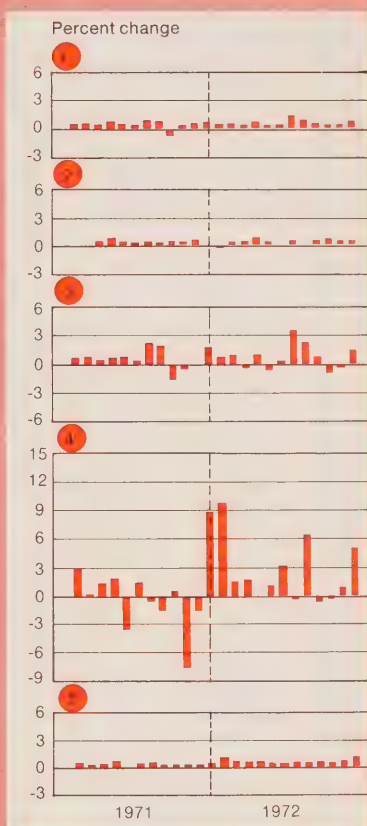
Price indexes express prices for a given period as a percentage of prices in a designated base period and consequently measure the movement of prices from one period to another. A

Selected indicators

Price indexes Indexes 1961 = 100
(Not adjusted for seasonality)



Price indexes
(Not adjusted for seasonality)



less frequent type of price index expresses prices in one location as a percentage of prices in a base location, which is set equal to 100, and measures the comparative levels of prices between different places at a fixed point in time.

21.3.1 Consumer price index

The purpose of the consumer price index is to measure the movement from month to month in retail prices of goods and services bought by a representative cross-section of the Canadian urban population. For a particular article or service, a price index number is simply the price of the article in one period of time expressed as a percentage of its price in a reference period, usually called a base period. However, indexes for individual goods may be combined to form indexes representing price movements of broad groups of goods and services. Thus, the consumer price index relates to the wide range of goods and services bought by Canadian urban families.

The group of goods and services represented in the index is called the index "basket" and "weights" are assigned to the price indexes of individual items for purposes of combining them into an over-all or composite index. The weights reflect the relative importance of items in expenditures of middle-size urban families with medium incomes. The basket is an

unchanging or equivalent quantity and quality of goods and services. Only prices change from month to month and the index, therefore, measures the effect of changing prices on the cost of purchasing the fixed basket. The baskets and weights on which the index is based from 1961 to April 1973 relate to 1957 spending patterns. From April 1973 forward, the index basket and weights will be based on expenditures in 1967 of families ranging in size from two to six persons, with annual incomes of \$4,000 to \$12,000, living in urban centres with metropolitan populations exceeding 30,000.

The movement of the consumer price index during the period 1961-71 is described in previous editions of the *Canada Year Book*. From 1971 to 1972, the annual average consumer price index increased by 4.8% which compares with an average increase in the preceding five years of 3.7%. On the basis of the movement in consumer prices, the purchasing power of the 1961 consumer dollar dropped from 75 cents in 1971 to 72 cents in 1972.

The major cause of the above-average increase in the consumer price index from 1971 to 1972 was a sharp rise in the rate of advance of the heavily weighted food component. The movements in the other components from 1971 to 1972 were roughly similar to the average increases of recent years. Table 21.16 presents indexes for major components and the all-items index for the period 1961 to 1972. In this classification, the index items are grouped according to broad categories of use by the consumer.

Items in the index may also be grouped by type of commodity and service, which permits another view of the incidence of changes in prices (Table 21.17). From 1971 to 1972 the goods index rose 4.6%, compared with an average rise of 2.7% for the preceding five years. The main cause of the above-average increase was a 7.6% rise in food prices, which was considerably more than the 2.4% rise on average for the preceding five years. Prices of non-durable goods excluding food, semi-durable goods, and durable goods increased 2.9%, 2.4% and 1.2%, respectively. The average increase over the preceding five years for these goods groupings were 3.4%, 2.8% and 1.7%, respectively. The services index rose 5.2% between 1971 and 1972 with the five-year average being 5.6%.

Table 21.18 presents regional consumer prices for 12 cities or city combinations. These indexes do not show whether it costs more or less to live in one city than in another and should not be used for such comparisons. Their function is to measure percentage changes in retail prices — over a certain time in each city or city combination — of a fixed basket of goods and services representing the level of consumption of a particular group of families. Indexes which compare price levels among major Canadian cities are given in Section 21.3.2.

In order to place movements in Canadian retail prices in perspective they may be compared with price changes occurring elsewhere in the world. This is done in Table 21.19, which indicates the percentage changes over the previous year in the consumer price index for each country specified. For purposes of comparison countries are listed alphabetically, by region. It should be noted that all percentages are rounded to the nearest whole number.

21.3.2 Intercity retail price differentials

As noted in the previous section, the regional city price indexes given in Table 21.18 measure the movements of consumer prices within each city and cannot be used to compare levels of prices between cities. Indexes that do compare levels of prices among 11 major Canadian cities are given in Table 21.20. These indexes express prices in each city as a percentage of prices in Winnipeg as at May 1971, with Winnipeg prices at that date set equal to 100. The selection of Winnipeg as the base city has no special significance; the indexes may be expressed on the base of any of the individual cities included. The selected commodity groupings shown make up about three quarters of the average urban consumer budget, the most important omissions, for technical reasons, being shelter (rented and owned), fuel, light and water, and restaurant meals.

The retail prices from which the indexes were derived are largely those collected in each city for production of the consumer price index. The main exception to this is food at home where the retail prices were obtained from a special ad hoc survey in May 1971. Comparability between cities was achieved by matching, as far as possible, quotations for similar qualities of goods and services and types of retail outlets. Since prices compared include sales and excise taxes as applicable, variations between provinces in the scale of sales taxes imposed on a wide range of non-food commodities can be of significance in explaining intercity price differentials for these items.

21.3.3 Consumer expenditure

Household surveys of family expenditure provide information on consumer spending that can be related to family characteristics, such as geographical location, family size, income level, etc. In general, a survey program has consisted of two phases – the collection by means of monthly record-keeping surveys throughout the reference year of detailed information on family food expenditures, and the collection of information by annual recall of all family expenditure, income and change in assets and liabilities. In 1953, the small-scale continuing survey was initiated, and until 1968 seven survey programs were conducted. In three survey years (1959, 1964 and 1967) the monthly surveys were omitted and the annual recall surveys were enlarged in size and scope to refer to all families and individuals regardless of family type or income.

A primary purpose of such surveys is to provide information for constructing, reviewing and revising the weights of consumer price indexes. In more recent years a growing demand for expenditure statistics to serve other needs of government, business, welfare organizations and academic research culminated in the expansion of the 1969-70 survey program to provide a large-scale national survey for the first time since 1948-49, covering both urban and rural households in the ten provinces; the Yukon Territory and the Northwest Territories were not included. The family expenditure survey undertaken for 1971 was designed to collect expenditures on shelter and household durable goods purchases. Family records were obtained from a sample of about 3,600 families and individuals in eight major regional cities (St. John's, Halifax, Montreal, Ottawa, Toronto, Winnipeg, Edmonton and Vancouver).

Table 21.21 presents a summary of family expenditures for families of two or more persons in eight Canadian cities, classified by family income in 1971.

21.3.4 Wholesale price index

The term "wholesale prices" refers to transactions that occur below the retail level. It relates to sales and purchases of raw materials, semi-processed goods and manufactured products. Indexes of wholesale prices are constructed in two ways: on an industry basis, in which the indexes are prepared for individual industries and aggregated for groups of industries; and on a commodity basis, in which indexes are prepared for individual commodities and aggregated for groups of commodities. "Industry selling price indexes" for manufacturing industries are the principal industry-classified indexes available in Canada. The "general wholesale index" is the major commodity-classified index.

Wholesale price indexes and individual price series have numerous uses, one of the most important of which is in escalator clauses of contracts where prices quoted are linked to movements of specified price indexes. They are also of major importance in studies of replacement and construction costs in investment projects; analyses of price movements of both individual items and commodity groups in relation to purchases and sales; industrial planning and market analysis; valuations for tax purposes and inventory analysis; and studies of changes in real production. Foreign companies also utilize the indexes in assessing the competitive position of Canadian goods.

Industry selling price indexes (manufacturing). Indexes of the selling prices of some 100 individual industries classified to manufacturing in the Standard Industrial Classification are produced and published monthly. In addition, indexes are published for 12 major groups of manufacturing industries and a composite gross weighted index for all manufacturing has been introduced recently.

The indexes measure the movements through time of prices received by manufacturers for their products. Prices reflected in the index are f.o.b. manufacturers' establishment, excluding taxes levied on manufacturers' sales. The items in the current indexes and their weights, indicating their relative importance, are based on manufacturers' shipments in 1961. The composite gross weighted index for manufacturing is presented in Table 21.22, for the years 1962-72.

The general wholesale index includes mainly manufacturers' prices but also incorporates those of wholesalers proper, assemblers of primary products, agents and operators of other types of commercial enterprises which trade in commodities of a type, or in quantities characteristic of primary marketing functions. Prices are grouped according to a commodity classification scheme based on chief component material similarities. Indexes classified according to degree of manufacture are also available. In Table 21.23, the general wholesale

index is presented for the period 1949-72. This index is used as a conventional summary figure against which to observe the behaviour of particular price groups such as farm products, raw materials and building materials, for which separate price indexes have been constructed.

World wholesale price indexes. Price changes among different countries have varied widely during the years. Comparisons of Canadian wholesale price indexes with those of other countries for the years 1970-72 are given in Table 21.24.

21.3.5 Construction and capital goods

This Section covers price indexes currently available for residential and non-residential building, and engineering construction.

Residential and non-residential building construction indexes. Two series of indexes are produced by Statistics Canada measuring price changes for residential and non-residential building construction. These are base-weighted indexes of materials and labour, and are presented in Table 21.25 for the years 1962-72.

Federal sales tax has been added to the materials indexes where appropriate. The wage rate component, from 1971 forward, is derived mainly from surveys of agreements conducted by the Canadian Construction Association for construction trades in various centres; these are base rates which reflect union scale or collective agreements. The combined indexes of materials and wage rates do not reflect changes in profit margins or in productivity; implicit price indexes from gross fixed capital formation reflecting these factors are available from the Gross National Product Division of Statistics Canada.

Highway construction indexes. The price indexes of highway construction in Canada express prices paid by provincial governments each year in contracts awarded for highway construction as a percentage of price paid in 1961. The base-weighted indexes measure the effect of price change on the cost of specified programs of new highway construction represented by contracts of approximately \$50,000 or more awarded by provincial governments. Indexes for the period 1962-71 are given in Table 21.26.

The all-items indexes and their components are useful in planning and budgeting for highway construction programs, in updating previously costed projects, in estimating replacement cost of previously completed road work and in measuring historical price trends. Prices contained in the index are for units of construction work put in place, such as a cubic yard of earth excavation or a ton of bituminous hot-mix paving. Also included are prices of some materials, such as culvert pipe, usually supplied to the contractor by the highways department. *Prices and price indexes* for December 1967 contains details of the problems of estimating price change for highway construction.

Electrical utility construction indexes. The price indexes of electrical utility construction, which include those of distribution systems, transmission lines, transformer stations and hydro-electric generating stations, give an estimate of the impact of price change on the cost of materials, labour and equipment used in constructing and equipping electrical utilities in a specified base period. The index provides an estimate of how much more, or less, it would cost to reproduce the base-period program of construction in another period, using the same construction technology as in the base period and assuming rates of profit and productivity in construction are the same in both periods.

Price indexes for the years 1962-72 are presented in Table 21.27. Prices used in the indexes are, for the most part, selling prices reported monthly by manufacturers for materials or equipment. The price reported is for units and terms of sale representative of the volume sales of the manufacturer. Federal sales tax changes are reflected in the index but no adjustments have been made for provincial tax changes. Until December 1964, wage rate data were supplied by the Department of Labour and represented minimum hourly rates paid to construction workers in major cities employed on federal government contracts. In 1965, union basic wage rates reported by major utilities and some contractors were incorporated into the index. The sample selected provides an estimate of wage rate change for urban own-account and contract electrical utility construction.

Price indexes of machinery and equipment. A system of base-weighted price indexes for machinery and equipment has been under development for a number of years, a principal use of which would be the restatement of historical investment costs in terms of price levels of a particular year. At present, only price indexes of construction and forestry machinery and equipment have been published and are provided in Table 21.28.

Prices used in the indexes are, for the most part, selling prices reported monthly by manufacturers, although in some cases distributors' prices are used. Prices of imported machinery and equipment are included in the index, represented either by commodity price indexes of the United States Bureau of Labor Statistics or by prices collected directly from foreign manufacturers. All prices have been adjusted as relevant to include duty, exchange and federal sales tax.

21.3.6 Security price indexes

Security price indexes measure, through time, the effect of price change on the value of a portfolio of stocks bought and held by a hypothetical investor (as opposed to the more speculative trader). The portfolio represents stocks of Canadian companies listed on the Toronto, Montreal and Canadian stock exchanges. In the case of the mining index, eligible issues are for producing mines only. The indexes in Table 21.29 express current prices as a percentage of prices in 1961.

21.4 Balance of international payments

The Canadian balance of international payments summarizes transactions between residents of Canada and those of the rest of the world. Current account transactions, which measure the flow of goods and services between Canada and other countries, are included, with minor adjustments, as a component of gross national expenditure. Capital account transactions between residents and non-residents are included in the financial flow accounts. Current account transactions are summarized in Tables 21.30 and 21.31. The Canadian balance of international payments for 1970-72 is presented in Table 21.32.

Analysis of 1971 flows. Canada recorded a reduced current account surplus of \$401 million in 1971 – a substantial decline from \$1,082 million in 1970, which had been the first surplus recorded since 1952. The size of the 1970 surplus was, however, produced mainly by a combination of several special factors which resulted in an extremely large merchandise trade surplus.

With the economy gaining strength in 1971, as evidenced by the 9.1% rise in gross national product in current dollar terms, the growth in imports outpaced that of exports. The merchandise trade surplus in 1971 therefore fell to \$2,397 million from \$3,048 million in 1970. The deficit on non-merchandise transactions continued to rise and reached \$1,996 million in 1971, up \$30 million from the previous year. On a seasonally adjusted basis, the current account balance declined throughout 1971 going from a surplus of \$343 million in the first quarter to reach a deficit of \$216 million in the last three months of the year.

Inflows of capital in long-term forms declined to \$394 million from \$742 million in 1970 and over \$2,000 million in 1969 (abstracting deliveries of securities contracted for in earlier years, the 1971 figure was only \$113 million). The main feature in this decline has been the reduction in new issues of Canadian securities sold abroad to \$1,162 million in 1971 from levels of around \$2,000 million in both 1968 and 1969 and \$1,227 million in 1970. A greater proportion of new Canadian issues was raised on the Canadian markets in both 1971 and 1970 than in 1969, reflecting the easing monetary situation in Canada and the general availability of funds at comparable cost. During this period outflows for Canadian direct investment abroad were at levels much above those prevailing prior to 1969. In addition, there were sharp increases in government loans and advances to developing countries and international investment agencies and in export credits financed directly or indirectly at risk of the Government of Canada. Factors tending to increase the long-term inflow were the continued movement of foreign direct investment into Canada at substantial rates, climbing from \$590 million in 1968 to \$885 million in 1971, and the continued disinvestment by Canadians (particularly financial institutions) of their foreign portfolio investments which led to an inflow of \$191 million in 1971. The bulk of this reduction was in US equities and coincided with a protracted decline in North American stock exchange prices.

Short-term capital movements in 1971 led to a net capital outflow of \$18 million. The principal factor accounting for the change from successive outflows was the influx of \$874 million resulting from the reduction in Canadian holdings of foreign bank balances and other short-term funds abroad, following five successive annual outflows totalling over \$3,000 million. The build-up of these balances was accelerated during periods of very high interest rates abroad, particularly Eurodollar rates. The category "other short-term capital transactions" led to a net outflow of \$1,082 million of which about 85% was accounted for by

the balancing item representing the difference between the direct measurements of the current and capital accounts.

Although the economy showed strong resurgence in Canada in 1971, it was a year of crisis on the international economic front. Over a period of some years there had evolved a series of crises of confidence in the viability of the existing international financial structure and particularly the role of the US dollar within it. These recurring crises reached a new peak in the summer of 1971 and the United States introduced new economic policy measures on August 15 to improve its domestic and international economic positions. To cushion the effect on Canadian economic activity the Canadian government in early September introduced proposals for an employment support program. At the same time Canada participated actively in efforts to reshape the international monetary system. A package involving the realignment of most major currencies vis-à-vis the US dollar was worked out in Washington in mid-December. Included in the package was a commitment by the United States to change the price of gold from US\$35 an ounce to US\$38 an ounce. Currencies would be allowed to fluctuate within 2¼% above or below their new central rates. No central rate was established for the Canadian dollar. Bilateral trade negotiations were entered into by the United States to obtain some concessions from its major trading partners.

21.4.1 Current account transactions

During 1971 a current account surplus of \$401 million was recorded, about one third the 1970 surplus of \$1,082 million, which was the first positive balance since 1952 (Table 21.30). The surplus on merchandise trade dropped by 21% but remained well over the \$2,000 million mark. The non-merchandise deficit advanced slightly to \$1,996 million.

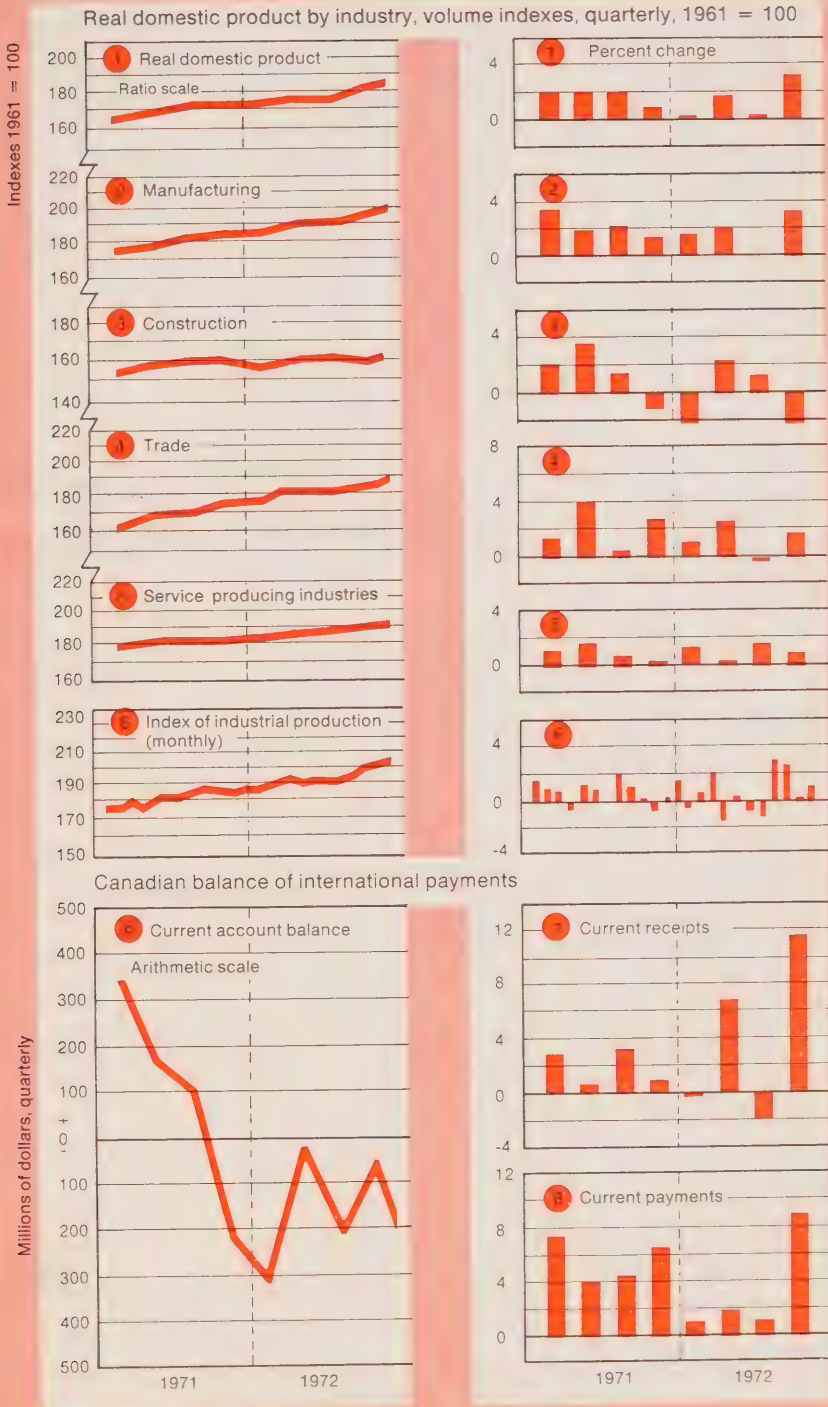
In comparing 1971 with 1970, however, it should be recognized that as far as merchandise trade was concerned, 1970 was an unusual year in a number of ways. In the first place, demand for Canadian products was influenced by foreign catch-up requirements of metals following the 1969 strikes in the mining industry in Canada. Wheat and barley shipments were influenced by drought conditions in other wheat-exporting countries and by the onset of the southern corn blight in the United States which led to lower barley yields there. Moreover, 1970 was a year of some sluggishness in the Canadian economy and the level of imports tended to reflect this situation. The strike in the automobile industry was another factor which reduced the level of imports more sharply than that of exports. In addition, the appreciation of the Canadian dollar following its floating in June of that year further tended to reduce the value of imports. Thus in 1970 the trade balance, partly because of these special reasons, reached the highest level on record at \$3,048 million. The deterioration in the 1971 current account balance resulted from economic slowdowns in some of Canada's overseas markets which adversely affected Canadian exports and from the boom in merchandise imports, especially from the United States and Japan, reflecting the increase in economic tempo in Canada.

There was a moderate increase of 6% in merchandise exports to \$17,929 million while imports, following a 1% decline in 1970, surged by over 12% to \$15,532 million. There were gains in trade of motor vehicles, engines and parts as exports expanded by 19% while imports jumped by 28% to produce an automotive trade surplus (adjusted for balance of payments purposes) of about \$112 million, down from about \$313 million in the preceding year. Sales of lumber, wheat, crude petroleum, rapeseed, barley and natural gas also recorded healthy increases, while exports of copper, fabricated nickel, iron ore and aircraft, engines and parts declined. On the imports side, crude petroleum, communication equipment, tractors, fabricated iron and steel, office machinery, electrical equipment, excavating machinery, wearing apparel, fabrics and synthetic yarn showed notable increases while aircraft, engines and parts, inorganic chemicals, metal working machinery and other types of industrial machinery recorded decreases.

Receipts and payments on non-merchandise transactions, excluding withholding taxes, both rose moderately with receipts at \$4,914 million expanding by one half of a percentage point more than payments which went up to \$6,910 million.

Interest and dividends received in 1971 totalled \$557 million. Nearly all of the moderate increase over 1970 was accounted for by a rise in earnings on official holdings of foreign exchange which in 1971 continued to be the major component in the interest receipts item. Total interest and dividends paid in 1971 were \$1,628 million. Reflecting mostly new issues of

Selected indicators—seasonally adjusted



provincial government bonds and new issues of corporate bonds placed in the United States, payments of interest on funded debt rose to \$783 million. Irregularly large dividends in the fourth quarter of 1971 caused an annual increase of \$39 million over 1970, despite a significant decline in profit remittances of unincorporated Canadian branches of US corporations and smaller disbursements of dividends of Canadian publicly listed companies.

Receipts for travel and freight and shipping both rose by approximately 5%. Travel receipts neared the \$1,300 million mark while receipts on freight and shipping, buoyed somewhat by the longshoremen strike in the United States, amounted to \$1,184 million. On the other hand, other service receipts declined to \$1,340 million due to lower receipts from foreign governments and a reduction in miscellaneous income.

With the United States the current account deficit remained relatively unchanged at \$193 million during 1971 (Table 21.31). On merchandise trade the surplus increased by \$58 million to \$1,192 million following approximately 10% increases in both exports and imports over the previous year. With the raising of the US import quotas, sales of crude petroleum increased. Exports of natural gas also rose and shipments of lumber surged ahead with the boom in residential construction in the United States. More motor vehicles, engines and parts and aluminum were also exported while there was a decrease in deliveries of iron ore and nickel. On the imports side, motor vehicles, engines and parts led the way with a 25% increase. More agricultural machinery, communication and office equipment were imported while purchases of aircraft, engines and parts fell sharply.

The current account surplus with the United Kingdom dropped by 30% to \$502 million resulting largely from a decline in the commodity trade surplus to \$568 million. Merchandise exports at \$1,400 million were down from the previous year, while imports advanced by 13% to \$832 million. All of the service and transfer items except other service transactions contributed to the increase in the non-merchandise deficit to \$66 million.

21.4.2 Capital movements

Capital movements between Canada and other countries in 1971 produced a net inflow of \$376 million, a decrease of \$72 million from 1970. Inflows of capital in long-term forms declined \$348 million from 1970 levels to \$394 million while short-term capital movements led to an outflow of \$18 million, a change of \$276 million from a 1970 net outflow. The net capital inflow, together with a current account surplus of \$401 million and a \$119 million allocation of Special Drawing Rights, produced an increase in Canada's net official monetary assets of \$896 million.

Direct investment. Initial estimates indicate that, for the year 1971, the direct investment net inflow amounted to \$885 million and resulted in the largest net inflow ever recorded. US investors contributed about 68% of the total and directed the largest part of this capital to the petroleum and natural gas and the mining industries. In contrast, the bulk of the net inflows of capital from continental Europe and Japan was for the manufacturing sector of the economy.

The net capital outflow for Canadian direct investment abroad during 1971 amounted to \$305 million, about 60% of it directed to the United States, 19% to the United Kingdom and continental Europe, and the remainder approximately equally divided between the rest of the sterling area and all other countries. By far the largest part of the net outflows originated with the mining sector although the petroleum and natural gas and the transportation sectors contributed significant amounts.

Security transactions. Portfolio transactions during 1971 gave rise to net inflows of \$311 million, marking a continuation of the decline in 1970 to \$565 million from the 1969 level of \$1,806 million. Inflows from sales of new Canadian issues abroad at \$1,162 million were down from already low 1970 inflows of \$1,227 million, while retirements for 1971 of \$804 million were at record high levels. This combination of moderate foreign sales of new issues and high security retirements gave effect to the lowest net new financing from abroad since 1962. Trade in outstanding Canadian securities also contributed to the decline in portfolio inflows with a \$54 million increase in net outflows to \$238 million from \$184 million in 1970. Transactions in foreign securities, however, gave rise to substantially increased net inflows as Canadians reduced their holdings of outstanding foreign securities by \$244 million, an increase of \$146 million from net sales in 1970 of \$98 million. This inflow was offset to some extent by an increase in sales in Canada of new foreign securities to \$63 million from \$34 million in 1970, while retirements of foreign securities held by Canadians were estimated at \$10 million.

Long-term interest rate differentials between Canada and other countries, which had narrowed during 1970 from 1969 levels, continued to offer little incentive to Canadian borrowers to increase offerings abroad. Consequently, although total issues of Canadian funded debt and equities increased slightly during 1971, sales to non-residents at \$1,162 million were moderately lower than during 1970. This reduction, which is more noticeable in terms of offerings during 1971, was in line with the general policy of the Government of Canada to discourage increases in long-term borrowing abroad, and the mix of sales suggests that increased use of foreign markets occurred mainly to retain credit lines and in situations where the Canadian market could not readily absorb the issue. Corporate borrowings abroad declined \$177 million during 1971 to \$363 million. Sales of new provincial direct and guaranteed issues to non-residents increased by \$197 million to \$724 million, while new issues of municipal bonds placed abroad were \$38 million lower, at \$26 million, than during 1970 when there were large issues sold to non-residents during the first and second quarters. Retirements of Canadian securities held abroad at \$804 million were \$252 million higher than during 1970. The high retirement rate can be attributed to a heavy maturity schedule for provincial bonds held by non-residents during the second quarter and to a relatively high rate of early retirements during the second and fourth quarters. An additional outflow was incurred during the fourth quarter as a result of the settlement of Atlantic Acceptance Corporation long-term notes.

Other capital flows in long-term forms. Assistance abroad by the Canadian government consists largely of payments of regular assessments by the international organizations of which Canada is a member, official contributions, intergovernmental loans, subscriptions to the capital of investment agencies and the extension of export credits. Both assessments and contributions form a part of Canada's payments on current account, while other transactions, to the extent that they give rise to claims on non-residents, are reflected mainly in capital movements in long-term forms.

Disbursements on intergovernmental loans extended by Canada increased markedly by \$27 million to a total of \$139 million for the year. Commonwealth countries accounted for over 80% of the total.

Loans and subscriptions to international agencies in 1971 amounted to \$53 million, an increase of \$21 million over the previous year. The International Development Association accounted for \$50 million of the total which was paid in the form of non-negotiable non-interest-bearing Canadian dollar demand notes. Changes in such Canadian obligations to the IDA and to the Caribbean Development Bank are reflected in the capital account covering Government of Canada demand liabilities.

During the year Canada received repayments of \$36 million in principal on intergovernmental loans extended earlier. Receipts of \$20 million, \$9 million, \$5 million and \$2 million came from the United Kingdom, France, the Netherlands and Belgium, respectively. In addition to the payments of principal, there were receipts of \$24 million during 1971 on account of interest. These receipts form part of the current account item comprising Canada's receipts of interest and dividends.

Receipts from the United States associated with the Columbia River Treaty amounted to \$24 million representing the last maturity of the medium-term non-marketable US government securities acquired in connection with the Treaty arrangements.

Capital movements in short-term forms (apart from changes in net official monetary assets) led to a net capital outflow of \$18 million, a change of \$276 million from a 1970 outflow.

Canadian dollar deposits of non-residents rose by \$92 million over the year. Residents of the United States, the United Kingdom and other countries increased their holdings by \$22 million, \$9 million and \$61 million, respectively.

Changes in Canadian holdings of foreign currency bank balances and other short-term funds abroad led to a net capital inflow of \$874 million compared with an outflow of \$424 million in the preceding year. A very large net inflow from the United States of \$1,686 million was somewhat offset by net outflows to the United Kingdom and other countries of \$232 million and \$585 million, respectively. These movements are consistent with changes in hedged interest rate differentials between Canada and the United States and Europe. Canadian holdings of swapped deposits dropped considerably by \$951 million to an end-of-the-year level of \$732 million. Net inflows through the chartered banks were partially offset by net outflows to build up balances held directly abroad by Canadians in foreign banks.

In general the large sales of Canadian money market paper abroad which occurred during the latter part of 1970 did not continue into the first quarter of 1971 and substantial net outflows during the first half of 1971 resulted. The total volume of trading with non-residents was somewhat lower than during 1970. This may have reflected generally lower covered interest rate differentials between Canada and the United States (substantially the largest market for these instruments) as well as the extension in the second quarter of withholding tax to discounted notes redeemed prior to maturity.

21.4.3 International monetary assets and liabilities

Canada's net official monetary assets totalled US\$5,570 million at December 31, 1971, an increase of US\$891 million over the year. The increase in reserves of US\$578 million in the fourth quarter was the largest since the second quarter of 1970 when the Minister of Finance announced that the Canadian dollar would no longer be pegged to within 1% of its par value of 92½ US cents. The increase in Canada's official holdings of US dollars resulted on balance from purchases of foreign exchange in the last quarter of the year when an unusual degree of uncertainty existed in the exchange markets.

Holdings of US dollars increased by a near record amount of US\$1,039 million in the year. Over three quarters of the increase occurred in the last five months of the year following the introduction of new economic policy measures by the United States on August 15. Holdings of other convertible currencies declined by US\$1 million to US\$13 million at the end of the year. There were, however, relatively large variations in holdings during the year with a peak in May equivalent to US\$18 million.

Canada's holdings of Special Drawing Rights (SDRs) totalled US\$372 million at year-end, an increase of US\$190 million in the year. Of this increase, US\$118 million was due to Canada's acceptance of its second allocation of SDRs on January 1, 1971. An increase of slightly over US\$1 million was recorded for monetary gold during the year to yield a total of US\$792 million at the end of the year.

The total of the above transactions led to an over-all increase in Canada's net official monetary assets during the year expressed in Canadian dollars of \$896 million. The Canadian dollar in relation to the US dollar experienced very small fluctuations during the first part of the year until June when it fell sharply by over 1% to a low for the year of 102.53 cents for US\$1.00. Subsequently, the Canadian dollar rose steadily to a high of 99.31 cents in late December.

21.4.4 Analysis of 1972 flows

As Table 21.32 shows, Canada recorded a current account deficit of \$579 million in 1972, a swing of almost \$1,000 million from the 1971 surplus of about \$400 million. Almost all of the change resulted from a decline of \$900 million in the merchandise trade surplus to \$1,497 million. The largest quarterly current account deficits in the year, on a seasonally adjusted basis, were recorded in the first and third quarters when the merchandise trade surpluses were at their lowest.

Buoyant economic activity in Canada, particularly in the latter part of the year, encouraged the growth of imports which, over the year as a whole, rose about 60% faster than exports. A relatively low rate of growth in exports to overseas countries probably reflected a slower pick-up in economic growth in many of these countries than in Canada, especially in the early part of the year.

Total current receipts and payments each surpassed the \$25,000 million mark, registering gains of 10% and 14%, respectively. The difference in rates of growth of exports and imports was probably influenced by strikes in Canada and overseas. In Canada there were dock strikes in the St. Lawrence ports and on the west coast in the second and third quarters, respectively. A seamen's strike in Japan in the second quarter and a dock strike in the United Kingdom in the third quarter also interrupted trade flows.

During 1972 Canada's balance on current transactions weakened with each of the five main areas. With merchandise imports registering marked increases and exports growing at a lower rate or decreasing to some overseas markets the trade balances with all regions declined.

Capital movements led to a net inflow of \$795 million in 1972, more than double the previous year's total. Inflows of capital in long-term forms rose sharply to \$1,773 million from \$394 million in 1971. The main features of this increase were a greater reliance on foreign financing for their bond issues by the provinces and municipalities and a swing to net sales of outstanding Canadian pay bonds, particularly government issues. Lower interest rates,

especially for German mark and Swiss franc issues, encouraged the placement of new issues abroad. Factors accounting for the net sales of outstanding Canadian issues to non-residents were the attractive yields in Canada and their exemption from withholding tax. Augmenting the net inflow were a reduction in outflows resulting from the retirement of Canadian securities held by non-residents and an increase in their miscellaneous long-term investment in Canada.

Short-term capital movements in 1972 led to a net capital outflow of \$978 million, up by \$960 million from the 1971 level. Changes in these accounts were undoubtedly influenced by interest rate differentials on a hedged and unhedged basis between Canada and the United States and Canada and Europe. The international currency markets at the beginning of 1972 did not react very positively to the Smithsonian exchange rate realignments of December 1971. Waves of speculative activity in the foreign exchange markets of the world were common during the year although conditions in Canada were relatively stable. In June the pound sterling was floated while in other countries capital controls were increased to try to insulate currencies from speculative attacks. The demand for Eurodollars, which could be exchanged into a currency which might be revalued upward, raised Eurodollar interest rates to levels which were often attractive to Canadian investors. In Canada, action was taken which reduced the attractiveness of some Canadian money market instruments to foreign investors through an agreement in early June between the chartered banks, concurred in by the Minister of Finance, by which the banks lowered their interest rates on various types of deposits, including deposit notes.

Canada's net official monetary assets totalled US\$6,050 million at December 31, 1972, an increase of US\$480 million in the year. Of this change, US\$134 million occurred as a result of the revaluation of the stock of Canada's gold-based assets in May. These assets include gold, Special Drawing Rights and Canada's reserve position in the International Monetary Fund. Reserves therefore rose by US\$346 million (\$333 million expressed in Canadian dollars) apart from the revaluation of existing holdings.

21.5 International investment

Canada has been among the world's largest importers of capital. Up to 1970 the demand for real resources from abroad, associated with the high rate of growth of the Canadian economy, to a great degree encouraged investments of non-resident capital. The current account deficit produced by the importation of real resources and the rapidly expanding financial needs of the corporate and government sectors of the economy was paralleled by the inflow of capital from abroad. While actual capital inflows have been the principal component of Canada's increasing foreign indebtedness, the unrepatriated earnings of foreign owned branches and subsidiaries are also a significant factor. The very substantial capital formation, which was a feature particularly since the 1950s, was therefore associated with an unprecedented growth in the country's external liabilities. These investments contributed to a rapid rate of growth in the Canadian economy, particularly in the exploitation of natural resources, and added significantly to Canadian production, employment and income. At the same time they added substantially to the continuing burden of Canada's external debt and to the proportion of Canadian industry controlled by non-residents.

21.5.1 Balance of international indebtedness

The balance of international indebtedness is a phrase generally accepted in balance of payments terminology to include equity investments as well as contractual borrowings (Table 21.33). By the end of 1970 Canada's balance of international indebtedness had reached a book value of over \$28,900 million. Canada's total external liabilities in that year were about \$50,000 million of which some \$46,500 million was in the form of long-term claims. On the asset side, the total outflow of domestic long-term capital together with the increase in earnings accrued to Canadians abroad caused the total book value of Canadian long-term investment abroad to rise to about \$11,200 million. Due mainly to a significant increase in official holdings of foreign exchange, total Canadian assets abroad rose by about \$2,400 million to more than \$21,000 million at the end of 1970.

21.5.2 External liabilities

The latest year for which complete data are available is 1969. At the end of that year, Canada's gross external liabilities amounted to \$47,200 million with non-resident owned long-term investments in Canada reaching a book value of \$41,700 million (Table 21.34). Of

this amount some \$24,500 million was in the form of direct investment in Canadian enterprises. Investments in other Canadian equities, although smaller, were also substantial and there were periods in recent years of sharp increases in foreign holdings of Canadian bonds and debentures.

Dependence on external sources of capital for financing in periods of heavy investment activity has been characteristic of Canadian development. During the exceptional growth that occurred before World War I, non-resident investment was very high and the main source of that investment was London. However, during the first part of the interwar period, the United States became the principal source of external capital and by 1926 the portion of Canada's international debt owned in the US exceeded that owned in the United Kingdom. With some interruption during the 1930s US investment in Canada continued to increase, particularly after 1947 when the period of intense activity in the petroleum industry got under way. At \$33,031 million, US long-term investments in 1969 represented about 80% of all non-resident long-term investment in Canada, the main rise occurring in direct investment in companies controlled in the United States.

United Kingdom long-term investments in Canada totalled \$3,862 million at the end of 1969. As a proportion of total non-resident investments in Canada the British share was about 9%, well below their 36% share at the end of 1939 before the wartime repatriations. After reaching a low point in 1948, the value of UK investments in Canada increased each year to 1962, declined slightly in 1963, partly as a result of Canadian repatriation of investments in railways and further provincial takeover of other utilities, then increased again in subsequent years.

Long-term investments of countries other than the United States and the United Kingdom rose dramatically to \$4,775 million at the end of 1969. More than two and one half times larger than a decade earlier, long-term investment from this source continued to grow at a rate in excess of that of either the US or UK. It represented over 11% of total foreign long-term investment in Canada in 1969 as compared to just under 10% in 1968. Of the \$2,056 million direct investment in 1969 by all other countries, about 83% originated in Europe, primarily the Netherlands and France. Swiss direct investment showed the largest relative increase in this group for 1969.

In trying to assess the impact of foreign investment on the Canadian economy it is useful to consider not only the absolute dollar value but also the degree to which our industries have become subject to foreign control. The most recent comprehensive calculation of the ratios of non-resident ownership in Canadian manufacturing, mining and petroleum is for the year 1967. In that year the Canadian manufacturing industry was 52% owned by non-residents but capital subject to foreign control was 57%. These proportions compared with 50% and 56%, respectively, as recently as the end of 1957. In the field of petroleum and natural gas, non-resident ownership and control amounted to 62% and 74%, respectively, at the end of 1967, whereas at the end of 1957 non-resident ownership and control had amounted to 63% and 76%, respectively; in mining and smelting, non-resident ownership and control amounted to 61% and 65%, respectively, compared with 56% and 61% in 1957.

Canadian owned capital continued to play a leading role in the financing of several areas of business such as merchandising, railways and other public utilities. Thus, taking a broader range of business activity including manufacturing, petroleum, mining, merchandising and all utilities, non-resident ownership rose only slightly from 32% in 1948 to 35% in 1967. However, the importance of direct investment as a vehicle for foreign investment was evident in the fact that the share of capital invested in Canadian industries that was subject to foreign control jumped from 25% in 1948 to 35% in 1967.

21.5.3 Canadian assets abroad

Although there has been considerable growth in non-resident investment in Canada and in the balance of Canadian indebtedness to other countries, it will be noted that Canadian assets abroad (Tables 21.33 and 21.35) have continued to rise in value. These now equal a larger proportion of liabilities abroad than was the case before World War II. As a proportion of Canada's liabilities they rose from about one fifth in 1926 to about two fifths in 1970. This development was accompanied by a change in the structure of Canada's assets. The share of private long-term investment in Canada's assets declined from about 70% of the total in 1926 to about 45% in 1970. Assets abroad of the Government of Canada which were minor in 1926 accounted for nearly one third of the total in 1970. In fact, in the period immediately after World War II, the government proportion of Canada's foreign assets was even higher and in

some years accounted for as much as two thirds of the total. Various short-term holdings other than net official monetary assets accounted for the balance of Canada's foreign assets. Their share of total assets has varied over the years; from about a third of the total in 1926, the proportion became negligible by the end of World War II. In recent years they comprised about a fifth of the total. Long-term assets, both private and government, have tended to be greater than short-term assets over the years.

Canadian long-term investment abroad has increased over twelvefold from \$926 million in 1926 to \$11,401 million in 1970. The bulk of Canadian long-term investment abroad is in private investment, especially direct investment. The remainder is mostly in government loans and advances and subscriptions to international investment agencies.

Geographically, long-term investment in the United States of \$5,631 million made up slightly less than half of Canada's long-term investment abroad in 1970. About three fifths of total private investment was in that country. Outstanding Government of Canada credit provided under authority of the United Kingdom Financial Agreement Act, 1946, as subsequently amended in 1957, was the major element in the \$1,739 million of Canadian assets in the UK. In the decade of the 1960s the share of direct investment in Canada's assets in the UK increased to account for over a third of the total. In other Commonwealth countries, direct investment has always been the predominant form of Canada's assets. Although at the end of 1970 direct investment accounted for about three quarters of Canada's assets in these countries, its share was somewhat lower than in most of the previous years due to the expansion of Government of Canada credits made under the new development or "soft" loan program. In the 1960s direct investment emerged as the most important form of Canada's assets in all other countries and accounted for over one half of the total in those countries. Export credits made directly or indirectly at risk of the Government of Canada also continued to be an important element in Canada's assets in all other countries.

Canadian short-term assets, consisting of net official monetary assets, other Canadian short-term holdings of exchange and short-term receivables, have increased more than fourfold since the end of World War II to account for over two fifths of total assets in 1970.

21.6 Financial flow accounts

The financial flow accounts, introduced in 1969, provide a detailed exposition of financial activity in the Canadian economy within an integrated macro-economic accounting system. Financial transactions of the various sectors of the economy are brought into explicit statistical relationship with one another while the structure of the system provides a direct linking of financial data to production statistics in each sector of the economy. The presentation of financial statistics for the whole economy allows developments in any sector to be viewed in relation to other sectors or in relation to the entire economy. The simultaneous linking of financial and production statistics provides a statistical framework appropriate to investigation of the interrelationships of financial markets and markets for goods and services. The presentation of financial and production statistics within the framework of a balancing set of accounts has the additional benefit of exposing gaps in statistical coverage and providing a quality check on existing statistics.

The financial flow accounts focus on the sectors of the economy associated with the income and expenditure accounts (i.e., personal, business, government and foreign sectors) but provide a considerably more detailed articulation. The system describes 41 sectors and subsectors, more than half of which are devoted to the various types of financial institutions. Sector financial transactions are described in terms of 50 categories of financial assets and liabilities such as loans, bonds and mortgages. The balancing and internal consistency of the system is based on two important identity relationships. First, for the total economy, saving and investment are equal and changes in financial assets are equal to changes in financial liabilities. Secondly, in every sector, the excess of investment over saving or vice versa must be matched by offsetting changes in financial assets and/or financial liabilities. The first relationship ensures a balanced system while the second relationship ensures internal consistency.

Basically, what the accounts do is show the saving available from current revenue less current expenditure for each sector; non-financial capital formation undertaken by the sector is charged against the saving, leaving the net lending or borrowing requirements of each sector; the means by which funds flow between borrowing and lending sectors are shown by the presentation of net changes in the liabilities and assets of each sector. These changes are

frequently referred to as the source and use of funds respectively. The system reveals the important role of financial institutions in providing the link between borrowers and lenders by accepting deposits, for example, which may be highly liquid and yield low interest rates to the depositor. These funds deposited with a financial institution are in turn re-loaned in the form of loans with quite different liquidity and yield characteristics.

Financial activity in Canada in 1972 continued to expand to meet the strong demand for funds generated by the second full year of economic recovery. In particular, credit markets were able to satisfy the needs created by the continuing, very strong, growth of residential construction and the sharp surge on consumer spending which rose more rapidly than in any year since 1955. Demand for business financing was somewhat lower as increased cash flow resulting from an impressive rise in profits permitted business to satisfy more of its needs from internal sources. There was a considerable shift in the pattern of borrowing, however, as more attractive interest rates on bank loans drew business away from more traditional sources of funds. Plant and equipment expenditures and inventory accumulation by business were only moderately higher in 1972. Expenditures on machinery and equipment increased sharply but non-residential construction was little changed. Similarly, according to preliminary estimates, a strong growth in inventories in the first quarter was not maintained during the rest of the year.

The main thrust of the expansionary monetary and fiscal policy in 1972 was again directed toward the reduction of the considerable slack remaining in the economy. Unemployment persisted at unacceptably high levels throughout the year as the largest employment gains since 1969 were virtually offset by almost equally large increases in the labour force.

International currency markets continued to be plagued by considerable instability despite the major realignment of currencies resulting from the Smithsonian Agreement of December 1971. Conditions in Canada, however, were relatively stable although higher short-term interest rates in Canada attracted large short-term capital inflows in early summer, as residents converted substantial amounts of their foreign currency holdings. The threatened appreciation of the Canadian dollar was obviously incompatible with the principal objectives of monetary and fiscal policy. However, short-term rates declined sharply following the so-called Winnipeg Agreement in June when the chartered banks, with the concurrence of the Minister of Finance, agreed to limit interest rates on large deposits to 5½%. Keen competition between the banks to attract deposits to accommodate the demand for business loans had been largely responsible for the escalation of short-term interest rates during the first half of the year. By the end of the year short-term interest rates were only moderately higher than those at the end of 1971.

Long-term interest rates followed a similar course in 1972 although mid-year increases were by no means as pronounced as for short-term rates. Lower interest rates abroad, especially for German mark and Swiss franc issues, encouraged provincial and municipal governments to resume their long-term borrowing abroad on a fairly substantial scale.

The liquidity of the chartered banks fell to a new low in 1972 in line with the policy of close control adopted by the Bank of Canada in the summer of 1971. Despite further substantial inflows of deposits in 1972, the banks were obliged to reduce their holdings of more liquid assets, particularly of federal bonds, in order to meet the very strong demand for loan and mortgage funds.

Broadly defined money supply (currency and privately held Canadian dollar deposits) grew by 16% over the year, or at about the same rate as in 1971. During the first half of the year a rate of increase of 25% was recorded. However, following the restructuring of interest rates between banks and non-banks in late June there was a run down of non-personal term and notice deposits and the rate of increase slowed to 8%. Money supply, narrowly defined, in contrast, expanded sharply (at an annual rate of 19%) after averaging an annual growth rate of 7% in the first half of the year. Much of the increase in the latter part of the year occurred with the unusually large upswing in demand deposits in August.

The volume of credit market borrowing rose by a further 9% to \$17,274 million compared with the already high \$15,883 million of 1971. For both years this was equivalent to 17% of gross national product, indicating a continuing high rate of financial activity. Very strong increases were recorded in borrowing through bank loans, consumer credit and mortgages over the already high levels registered for 1971. Net sales of other bond issues, stocks and commercial paper, however, were sharply down.

The sources of credit market lending remained broadly the same as in 1971 although financial institutions other than the chartered banks grew somewhat more rapidly than the chartered banks themselves, increasing their net new lending to \$5,587 million compared with \$4,666 million in 1971. The chartered banks provided about the same substantial amount of financing as in 1971 as did public financial institutions. The rest of the world sector increased its net lending to \$1,587 million from \$223 million in 1971. To a large extent, this was associated with the resumption of large sales abroad of new provincial and municipal bond issues. Funds provided by "other domestic sectors", on the other hand, were sharply lower in 1972 reflecting, in part, a marked decrease in purchases of Canada Savings Bonds following the record levels of 1971. The series for "other domestic sectors" is dominated by personal sector data and should be interpreted with caution on this account. Personal sector data are produced largely by residual estimating techniques which may be subject to considerable error.

A summary matrix of the financial flow system is presented in Table 21.36. More detailed quarterly data for individual sectors and summary matrices are available.

Sources

- 21.1 Gross National Product Division, System of National Accounts (Current) Branch, Statistics Canada.
- 21.2.1 - 21.2.2 Industry Product Division, System of National Accounts (Current) Branch, Statistics Canada. *Indexes of real domestic product by industry, 1961-69, 1961=100*, Statistics Canada Occasional Paper (Cat. No. 61-510), gives data for 1961-69. For the period 1935-60, see *Real domestic product by industry, 1961 base* (Cat. No. 61-506). For a detailed explanation of concepts, methods and limitations, see *Indexes of real domestic product by industry of origin, 1935-61* (Cat. No. 61-505) and *Revised index of industrial production, 1935-57 (1949=100)* (Cat. No. 61-502). Current data on annual, quarterly and monthly bases are published in Statistics Canada monthly *Indexes of real domestic product by industry (including the index of production)* (Cat. No. 61-005).
- 21.2.3 Structural Analysis and Productivity Research Division, System of National Accounts (Structural) Branch, Statistics Canada. Productivity data published by Statistics Canada are in the form of annual indexes of output per person employed and per man-hour: *Indexes of output per person employed and per man-hour in Canada, commercial nonagricultural industries, 1947-63* (Cat. No. 14-501) and *Aggregate productivity trends* (Cat. No. 14-201).
- 21.3 Prices Division, General Statistics Branch, Statistics Canada. Indexes of selling prices of some 100 Canadian manufacturing industries, are available from the monthly Statistics Canada publication *Prices and price indexes* (Cat. No. 62-002). Price indexes relating to merchandise exports and imports are published monthly in Cat. No. 65-004 and No. 65-007, respectively. Implicit price indexes for gross national product and its main components are published quarterly in Cat. No. 13-001. A comprehensive description of the consumer price index is contained in *The consumer price index (1961=100) - revision based on 1967 expenditures* (Cat. No. 62-539). Results from the 1969 family expenditure survey are available in four volumes under the general title *Family expenditure in Canada, 1969* (Cat. Nos. 62-535 to 62-538 inclusive). Results from the 1969 food expenditure survey are available in two volumes entitled *Family food expenditure in Canada, 1969* (Cat. Nos. 62-531 and 62-532). Earlier surveys have been published in occasional reports under the titles *Urban family expenditure* (1959, 1962, 1964 and 1967); *City family expenditure* (1953, 1955 and 1957); *Urban family food expenditure* (1953, 1955, 1957 and 1962); and *Canadian non-farm family expenditures* (1947-48). Results from the 1971 survey will be published under the title *Urban family expenditure on shelter and household durables, 1971*. Price indexes for construction and capital goods are available in summary form in *Prices and price indexes* (Cat. No. 62-002) and in detail in the *Construction price statistics service bulletin* (Cat. No. 62-006). The building material price indexes are drawn from the system of industry selling price indexes published in *Industry selling price indexes 1956-1968* (Cat. No. 62-528). Monthly and certain weekly security price indexes appear in the Statistics Canada monthly publication *Prices and price indexes* (Cat. No. 62-002) and a weekly Statistics Canada report gives indexes on a weekly basis for all groups and subgroups.
- 21.4 Balance of Payments Division, System of National Accounts (Current) Branch, Statistics Canada.
- 21.5 Balance of Payments Division, System of National Accounts (Current) Branch, Statistics Canada. Statistics Canada report *Canada's international investment position* (Cat. No. 67-202) was published in December 1971, bringing together available data on Canada's international investment position for the period 1926-67 and extending and revising material published in *Canada's international investment position, 1926-54* and subsequent releases in Canada's balance of international payments reports. The main summary tables contain data from 1926 to 1970, while most of the detail extends only to 1967.
- 21.6 Balance of Payments Division, System of National Accounts (Current) Branch, Statistics Canada.

Tables

.. not available
... not appropriate or not applicable
— nil or zero
-- too small to be expressed

e estimate
p preliminary
r revised
certain tables may not add due to rounding

21.1 Gross national product in current and constant (1961) dollars, and index of gross national expenditure in constant (1961) dollars, 1947-72

Year	Gross national product		Index of gross national expenditure in constant (1961) dollars (1961 = 100)
	Millions of current dollars	Millions of constant (1961) dollars	
1947	13,473	21,366	53.9
1948	15,509	21,898	55.2
1949	16,800	22,735	57.3
1950	18,491	24,451	61.7
1951	21,640	25,673	64.8
1952	24,588	27,968	70.5
1953	25,833	29,408	74.2
1954	25,918	29,047	73.3
1955	28,528	31,788	80.2
1956	32,058	34,474	87.0
1957	33,513	35,283	89.0
1958	34,777	36,098	91.1
1959	36,846	37,470	94.5
1960	38,359	38,553	97.2
1961	39,646	39,646	100.0
1962	42,927	42,349	106.8
1963	45,978	44,531	112.3
1964	50,280	47,519	119.9
1965	55,364	50,685	127.8
1966	61,828	54,207	136.7
1967	66,409	56,016	141.3
1968	72,586	59,292	149.6
1969	79,815	62,448	157.5
1970	85,610	64,046	161.5
1971	93,402	67,782	171.0
1972	103,407	71,722	180.9

21.2 National income and gross national product, by component, 1969-72 (million dollars)

Item	1969 ^r	1970 ^r	1971	1972
Wages, salaries and supplementary labour income	43,065	46,743	51,331	56,849
Military pay and allowances	884	914	908	958
Corporation profits before taxes ¹	8,294	7,730	8,983	10,836
Deduct: dividends paid to non-residents ²	—854	—952	—993	—874
Interest, and miscellaneous investment income ³	3,082	3,449	3,767	4,160
Accrued net income of farm operators from farm production ⁴	1,435	1,227	1,498	1,680
Net income of non-farm unincorporated business, incl. rent ⁵	5,187	5,295	5,618	6,116
Inventory valuation adjustment	—576	—195	—663	—1,021
Net national income at factor cost	60,517	64,211	70,449	78,704
Indirect taxes less subsidies	10,722	11,302	12,320	13,711
Capital consumption allowances and miscellaneous valuation adjustments	9,019	9,838	10,655	11,590
Residual error of estimate	—443	259	—22	—598
Gross national product at market prices	79,815	85,610	93,402	103,407

¹ Excludes profits of government business enterprises.

² Includes withholding tax.

³ Includes profits (net of losses) of government business enterprises and other government investment income.

⁴ Includes value of physical change in farm inventories and accrued earnings of farm operators arising out of operations of the Canadian Wheat Board.

⁵ Includes net income of independent professional practitioners and imputed net rent on owner-occupied dwellings.

21.3 Gross national expenditure, 1969-72 (million dollars)

Item	1969 ^r	1970 ^r	1971	1972
Personal expenditure on consumer goods and services	47,492	50,086	53,989	60,277
Government current expenditure on goods and services	14,241	16,609	18,485	20,530
Gross fixed capital formation	17,232	18,123	20,527	22,313
Government	3,055	3,173	3,754	3,950
Business	14,177	14,950	16,773	18,363
Residential construction	3,845	3,608	4,553	5,352
Non-residential construction	4,772	5,385	5,952	6,123
Machinery and equipment	5,560	5,957	6,268	6,888
Value of physical change in inventories	1,467	121	201	496
Government	6	—13	—40	16
Business:				
Non-farm	969	255	202	764
Farm and grain in commercial channels	492	—121	39	—284
Exports of goods and services	18,761	21,171	22,293	24,497
Deduct: imports of goods and services	—19,821	—20,242	—22,116	—25,305
Residual error of estimate	443	—258	23	599
Gross national expenditure at market prices	79,815	85,610	93,402	103,407

21.4 Gross national expenditure in constant (1961) dollars, 1969-72 (million dollars)

Item	1969 ^r	1970 ^r	1971	1972
Personal expenditure on consumer goods and services	38,672	39,475	41,642	44,877
Government current expenditure on goods and services	9,461	10,404	10,951	11,326
Gross fixed capital formation	13,464	13,582	14,655	15,184
Government	2,359	2,344	2,640	2,658
Business	11,105	11,238	12,015	12,526
Residential construction	2,871	2,636	3,133	3,419
Non-residential construction	3,626	3,888	4,053	3,930
Machinery and equipment	4,608	4,714	4,829	5,177
Value of physical change in inventories	1,310	33	169	400
Government	3	-15	-36	13
Business:				
Non-farm	859	188	209	732
Farm and grain in commercial channels	448	-140	-4	-345
Exports of goods and services	15,830	17,315	18,195	19,422
Deduct: imports of goods and services	-16,644	-16,578	-17,853	-19,915
Residual error of estimate	355	-185	23	428
Gross national expenditure in constant (1961) dollars	62,448	64,046	67,782	71,722

21.5 Year-to-year percentage change in gross national expenditure, 1969-72

Item	1969 ^r	1970 ^r	1971	1972
Personal expenditure on consumer goods and services				
Value	8.7	5.5	7.8	11.6
Volume	4.6	2.1	5.5	7.8
Price	3.9	3.3	2.2	3.5
Government current expenditure on goods and services				
Value	12.3	16.6	11.3	11.1
Volume	3.7	10.0	5.3	3.4
Price	8.3	6.0	5.8	7.4
Gross fixed capital formation				
Value	9.4	5.2	13.3	8.7
Volume	4.9	0.9	7.9	3.6
Price	4.2	4.2	5.0	4.9
Government				
Value	2.4	3.9	18.3	5.2
Volume	-2.4	-0.6	12.6	0.7
Price	4.9	4.6	5.0	4.5
Business				
Value	11.0	5.5	12.2	9.5
Volume	6.6	1.2	6.9	4.3
Price	4.2	4.2	5.0	5.0
Residential construction				
Value	18.2	-6.2	26.2	17.5
Volume	12.8	-8.2	18.9	9.1
Price	4.8	2.2	6.1	7.7
Non-residential construction				
Value	4.8	12.8	10.5	2.9
Volume	-0.6	7.2	4.2	-3.0
Price	5.4	5.2	6.1	6.1
Machinery and equipment				
Value	12.0	7.1	5.2	9.9
Volume	9.1	2.3	2.4	7.2
Price	2.6	4.7	2.7	2.5
Exports of goods and services				
Value	12.2	12.8	5.3	9.9
Volume	9.8	9.4	5.1	6.7
Price	2.2	3.2	0.2	2.9
Imports of goods and services				
Value	16.5	2.1	9.3	14.4
Volume	13.3	-0.4	7.7	11.5
Price	2.8	2.5	1.5	2.6
Gross national expenditure at market prices				
Value	10.0	7.3	9.1	10.7
Volume	5.3	2.6	5.8	5.8
Price	4.4	4.6	3.1	4.6

21.6 Personal income, by source and by province, 1969-72 (million dollars)

Source and province or territory	1969 ^r	1970 ^r	1971	1972
Source				
Wages, salaries and supplementary labour income				
Military pay and allowances	43,065	46,743	51,331	56,849
Net income received by farm operators from farm production	884	914	908	958
Net income of non-farm unincorporated business including rent	1,424	1,135	1,428	1,602
Interest, dividends and miscellaneous investment income	5,187	5,295	5,618	6,116
Current transfers	4,848	5,357	5,576	6,178
From government				
Transfer payments to persons (excl. interest on public debt)	6,161	6,970	8,252	9,846
Capital assistance	4	10	16	26
From corporations (charitable & other contributions & bad debts)	136	140	144	152
From non-residents	95	107	118	128
Total, personal income	61,804	66,671	73,391	81,855

21.6 Personal income, by source and by province, 1969-72 (million dollars) (concluded)

Source and province or territory	1969 ^r	1970 ^r	1971	1972
Province or territory				
Newfoundland	923	1,027	1,142	1,310
Prince Edward Island	205	231	241	276
Nova Scotia	1,766	1,898	2,095	2,375
New Brunswick	1,295	1,417	1,579	1,793
Quebec	15,565	16,686	18,149	20,350
Ontario	25,629	28,022	30,599	33,835
Manitoba	2,704	2,857	3,167	3,551
Saskatchewan	2,269	2,113	2,520	2,719
Alberta	4,589	4,953	5,526	6,217
British Columbia	6,645	7,244	8,133	9,164
Yukon Territory and Northwest Territories	122	139	165	188
Foreign countries ¹	92	84	75	77

¹ Income of Canadians temporarily abroad, including pay and allowances of Canadian Armed Forces abroad.

21.7 Disposition of personal income, 1969-72 (million dollars)

Item	1969 ^r	1970 ^r	1971	1972
Personal expenditure on consumer goods and services	47,492	50,086	53,989	60,277
Current transfers				
To government				
Income taxes	7,464	8,811	10,143	11,410
Succession duties and estate taxes	241	266	277	228
Employer and employee contributions to social insurance and government pension funds	2,350	2,450	2,573	2,892
Other	838	1,073	1,110	1,041
To corporations (transfer portion of interest on the consumer debt)	526	640	649	702
To non-residents	163	169	171	176
Personal saving	2,730	3,176	4,479	5,129
Total, personal income	61,804	66,671	73,391	81,855

21.8 Personal expenditure on consumer goods and services, 1969-72 (million dollars)

Item	1969 ^r	1970 ^r	1971	1972
Food and non-alcoholic beverages	7,445	7,923	8,466	9,552
Tobacco and alcoholic beverages	3,026	3,312	3,555	3,910
Clothing, footwear and accessories	3,908	4,034	4,381	4,871
Gross rent, fuel and power	8,742	9,623	10,351	11,273
Furniture, furnishing and household equipment and operation	4,658	4,785	5,227	5,974
Transportation and communication	6,863	6,945	7,733	8,671
Medical care and health services	1,912	1,758	1,571	1,715
Other	10,938	11,706	12,705	14,311
Total	47,492	50,086	53,989	60,277
Durables	6,975	6,798	7,776	9,030
Semi-durables	6,426	6,645	7,224	8,113
Non-durables	15,073	16,205	17,376	19,414
Services	19,018	20,438	21,613	23,720

21.9 Federal, provincial and local government revenue and expenditure¹, 1969-72 (million dollars)

Item	1969 ^r	1970 ^r	1971	1972
Revenue				
Direct taxes: persons and unincorporated business				
Income taxes	7,464	8,811	10,143	11,410
Succession duties and estate taxes	241	266	277	228
Employer and employee contributions to social insurance and government pension funds	2,350	2,450	2,573	2,892
Direct taxes: corporate and government business enterprises	3,221	3,066	3,424	3,788
Direct taxes: non-residents (withholding taxes)	234	269	278	288
Indirect taxes	11,423	12,058	13,072	14,565
Other current transfers from persons	838	1,073	1,110	1,041
Investment income				
Interest and royalties	1,853	2,241	2,628	2,881
Remitted profits of government business enterprises	404	458	490	604
Total, revenue	28,028	30,692	33,995	37,697
Current expenditure				
Purchases of goods and services	14,241	16,609	18,485	20,530
Transfer payments to persons	6,161	6,970	8,252	9,846
Current transfers to non-residents	185	244	248	271
Interest on the public debt	2,767	3,250	3,563	4,104
Capital assistance	110	123	215	242
Subsidies	701	756	752	854
Saving	3,863	2,740	2,480	1,850
Total, current expenditure	28,028	30,692	33,995	37,697

21.9 Federal, provincial and local government revenue and expenditure¹, 1969-72 (million dollars) (concluded)

Item	1969†	1970†	1971	1972
Surplus or deficit (on a national accounts basis)				
Saving	3,863	2,740	2,480	1,850
Add: capital consumption allowances	1,113	1,231	1,334	1,482
Deduct: gross capital formation	-3,061	-3,160	-3,714	-3,966
Equals: surplus (+) or deficit (-)	1,915	811	100	-634

¹Excludes current transfers from other levels of government.

21.10 Annual growth rates¹ of real domestic product, by industry, 1961-72

Industry	1961-66	1966-72	1961-72	1970-72
Agriculture	5.6	1.3	1.9	2.3
Forestry	5.7	0.5	2.8	-1.1
Fishing and trapping	2.5	-2.8	0.3	-8.9
Mines (incl. milling), quarries and oil wells	6.6	6.3	6.0	4.6
Manufacturing	8.4	4.3	6.0	5.9
Non-durables	6.0	4.1	4.9	4.8
Durables	11.2	4.6	7.3	7.0
Construction	7.4	3.0	4.9	5.1
Electric power, gas and water utilities	7.2	8.4	7.9	8.5
Transportation, storage and communication	6.9	5.8	6.4	6.1
Transportation	7.6	5.7	6.6	6.1
Trade	6.7	4.5	5.5	6.8
Wholesale	8.2	4.8	6.4	6.4
Retail	5.8	4.4	4.9	7.1
Finance, insurance and real estate	6.3	5.8	6.1	6.1
Community, business and personal service industries	7.0	5.6	6.6	4.2
Public administration and defence	2.2	3.4	3.0	4.6
Real domestic product	6.8	4.8	5.7	5.5

¹ Based on the least squares of logarithms method.

21.11 Quantity indexes of real domestic product at factor cost, by industry of origin, 1965-72 (1961 = 100)

Industry	1961 percent- age weight	1965	1966	1967	1968	1969	1970	1971	1972
Agriculture	4.525	127.6	145.9	118.6	126.0	133.3	131.4	152.7	137.6
Forestry	1.231	122.5	132.7	130.3	131.2	139.5	136.8	135.0	133.8
Fishing and trapping	0.259	106.6	118.2	112.1	127.1	112.8	115.5	107.9	95.8
Mines (incl. milling), quarries and oil wells	4.564	131.9	134.2	142.1	152.4	153.5	175.3	182.9	191.8
Manufacturing	24.943	139.5	149.3	153.3	163.6	175.4	173.0	181.7	193.9
Non-durables	13.933	126.2	133.7	136.8	144.0	153.6	154.9	160.5	170.0
Durables	11.010	156.4	169.2	174.1	188.3	203.1	196.0	208.6	224.3
Construction	5.803	131.6	141.7	141.2	147.4	152.1	150.6	165.6	166.5
Electric power, gas and water utilities	2.908	129.9	141.4	151.2	162.8	177.7	194.3	207.6	228.9
Transportation, storage and communication	9.910	128.3	138.8	146.6	154.7	165.5	174.0	182.7	195.9
Trade	12.973	129.4	137.6	144.7	150.6	158.3	160.0	170.6	182.6
Wholesale	4.906	135.8	146.4	154.7	162.6	171.9	174.1	183.6	197.0
Retail	8.067	125.5	132.3	138.6	143.3	150.0	151.4	162.6	173.8
Finance, insurance and real estate	11.831	126.7	135.7	142.9	152.8	162.1	170.0	179.3	191.2
Community, business and personal service	13.821	129.6	139.9	150.6	160.5	172.0	179.4	187.0	194.8
Public administration and defence	7.232	108.3	112.2	118.2	120.1	122.7	127.0	132.4	138.9
Real domestic product	100.000	130.0	139.4	144.1	152.5	161.6	165.6	175.0	184.3

21.12 Census value added for goods-producing industries, by province, 1968-70

Province or territory	1968		1969		1970		% change 1969-70
	\$'000	%	\$'000	%	\$'000	%	
Newfoundland ¹	459,744	1.4	521,181	1.5	684,256	1.9	+31.3
Prince Edward Island	66,187	0.2	69,656	0.2	86,004	0.2	+23.5
Nova Scotia	611,897	1.9	706,504	2.0	735,291	2.1	+4.1
New Brunswick	509,471	1.6	545,726	1.6	595,043	1.7	+9.0
Quebec	7,675,075	24.1	8,335,892	24.0	8,600,739	24.2	+3.2
Ontario	13,633,465	42.8	14,785,447	42.5	15,124,697	42.6	+2.3
Manitoba	1,178,960	3.7	1,305,765	3.8	1,319,065	3.7	+1.0
Saskatchewan	1,473,973	4.6	1,567,900	4.5	1,381,723	3.9	-11.9
Alberta	2,960,199	9.3	3,235,800	9.3	3,430,117	9.7	+6.0
British Columbia ²	3,198,738	10.1	3,579,448	10.3	3,426,586	9.7	-4.3
Yukon Territory and Northwest Territories ²	81,151	0.3	93,363	0.3	105,240	0.3	+12.7
Canada	31,848,859	100.0	34,746,681	100.0	35,488,762	100.0	+2.1

¹ Excludes agriculture.

² Construction figures for Yukon Territory and Northwest Territories are included with British Columbia.

21.13 Census value added for goods-producing industries, by province and industry, 1970 (thousand dollars)

Industry	Province or territory					
	Newfound- land	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario
Agriculture	..	27,895	41,747	37,094	388,329	816,522
Forestry	22,695	—	11,424	32,554	157,742	110,454
Fisheries	36,141	11,173	55,562	17,639	10,921	6,535
Trapping	129	..	193	301	1,828	3,476
Mining	226,457	..	58,498	34,843	494,911	841,184
Electric power	39,137	5,024	42,764	49,681	524,614	584,016
Manufacturing	123,624	20,535	308,072	270,674	5,797,861	10,524,756
Construction	236,072	21,316	217,030	152,257	1,224,533	2,237,754
Total	684,256 ¹	86,004	735,291	595,043	8,600,739	15,124,697
	Manitoba	Saskatchewan	Alberta	British Columbia	Yukon Territory and Northwest Territories	Canada
Agriculture	233,048	593,208	563,019	138,746	..	2,839,607
Forestry	2,949	7,106	8,695	329,203	129	682,953
Fisheries	2,142	1,931	826	60,255	1,111	204,236
Trapping	2,045	1,776	1,993	648	..	13,247
Mining	215,234	317,559	1,259,603	311,252	..	3,851,416
Electric power	77,034	70,910	107,508	197,547	8,528	1,706,766
Manufacturing	497,221	191,983	692,885	1,617,392	2,798	20,047,801
Construction	289,392	197,250	795,589	771,543	²	6,142,736
Total	1,319,065	1,381,723	3,430,117	3,426,586	105,240	35,488,762

¹ Excludes agriculture.² Construction figures for Yukon Territory and Northwest Territories are included with British Columbia.

21.14 Indexes of output per person employed, commercial industries, 1946-72 (1961 = 100)

Year	Output	Persons employed	Output per person employed
1946	51.6	84.3	61.2
1947	55.0	88.3	62.3
1948	57.0	90.0	63.3
1949	58.5	91.3	64.1
1950	62.7	91.3	68.7
1951	67.5	93.6	72.1
1952	72.5	94.5	76.7
1953	75.5	95.0	79.5
1954	73.8	94.4	78.2
1955	82.1	95.7	85.8
1956	89.5	99.5	89.9
1957	89.7	101.3	88.6
1958	91.0	98.4	92.4
1959	95.9	100.1	95.8
1960	98.0	99.6	98.4
1961	100.0	100.0	100.0
1962	107.5	102.5	104.9
1963	113.9	104.7	108.8
1964	122.5	108.4	113.0
1965	131.7	113.0	116.5
1966	141.4	116.8	121.1
1967	145.5	119.0	122.3
1968	154.1	119.5	129.0
1969	163.5	123.4	132.5
1970	167.2	123.4	135.5
1971 ^D	177.3	125.7	141.0
1972 ^D	187.2	128.5	145.6

21.15 Aggregate productivity trends, 1962-72 (1961 = 100)

Year and industry	Output	Persons employed	Man-hours	Output per person employed	Output per man-hour
Commercial industries					
1962	107.5	102.5	102.3	104.9	105.1
1963	113.9	104.7	103.7	108.8	109.8
1964	122.5	108.4	106.8	113.0	114.7
1965	131.7	113.0	110.4	116.5	119.3
1966	141.4	116.8	112.8	121.1	125.4
1967	145.5	119.0	114.2	122.3	127.4
1968	154.1	119.5	113.3	129.0	136.0
1969	163.5	123.4	116.0	132.5	141.0
1970	167.2	123.4	114.8	135.5	145.7
1971 ^D	177.3	125.7	116.2	141.0	152.6
1972 ^D	187.2	128.5	117.8	145.6	158.9
Annual rate of change					
1961-66	% 7.1	3.2	2.5	3.8	4.5
1966-72	% 4.8	1.6	0.6	3.2	4.2
1961-72	% 5.8	2.3	1.5	3.4	4.2

21.15 Aggregate productivity trends, 1962-72 (1961 = 100) (continued)

Year and industry	Output	Persons employed	Man-hours	Output per person employed	Output per man-hour
Agriculture					
1962	122.0	96.9	96.3	125.9	126.7
1963	136.9	95.3	93.5	143.7	146.5
1964	123.9	92.5	89.4	133.9	138.6
1965	127.6	87.2	83.3	146.3	153.3
1966	145.9	79.9	77.5	182.6	188.3
1967	118.6	82.1	78.5	144.5	151.1
1968	126.0	80.2	75.2	157.2	167.5
1969	133.3	78.6	74.2	169.7	179.6
1970	131.4	75.0	70.3	175.1	187.0
1971 ^p	152.7	74.9	70.4	203.9	217.0
1972 ^p	137.6	70.6	65.3	194.8	210.6
Annual rate of change					
1961-66	5.6	-4.1	-4.9	10.2	11.1
1966-72	1.3	-2.2	-2.8	3.6	4.3
1961-72	1.9	-3.1	-3.7	5.1	5.8
Commercial non-agricultural industries					
1962	106.6	103.4	103.6	103.1	102.9
1963	112.7	106.3	106.0	106.0	106.3
1964	122.4	111.1	110.7	110.2	110.6
1965	132.0	117.3	116.5	112.5	113.3
1966	141.2	122.9	120.6	114.8	117.1
1967	147.0	125.1	122.2	117.5	120.3
1968	155.7	126.1	121.9	123.5	127.8
1969	165.2	130.9	125.3	126.2	131.8
1970	169.1	131.5	124.8	128.6	135.5
1971 ^p	178.7	134.2	126.4	133.1	141.4
1972 ^p	189.9	138.2	129.6	137.4	146.6
Annual rate of change					
1961-66	7.2	4.3	3.9	2.9	3.2
1966-72	5.0	1.9	1.1	3.0	3.8
1961-72	6.0	3.0	2.3	2.9	3.6
Manufacturing					
1962	109.3	102.7	103.8	106.4	105.3
1963	116.7	105.2	106.7	110.9	109.4
1964	127.9	110.0	112.0	116.2	114.2
1965	139.5	115.7	117.7	120.5	118.5
1966	149.3	121.2	122.4	123.2	122.0
1967	153.3	121.7	122.1	126.0	125.6
1968	163.6	120.8	121.4	135.4	134.8
1969	175.4	123.2	123.3	142.4	142.3
1970	173.0	120.3	119.6	143.8	144.7
1971 ^p	181.7	119.2	118.3	152.4	153.6
1972 ^p	193.9	121.2	120.8	160.0	160.6
Annual rate of change					
1961-66	8.4	4.0	4.2	4.3	4.1
1966-72	4.3	-0.2	-0.4	4.5	4.7
1961-72	6.0	1.8	1.6	4.1	4.3
Non-manufacturing industries (commercial non-agricultural)					
1962	105.5	103.7	103.5	101.7	101.9
1963	110.9	106.8	105.6	103.8	105.0
1964	119.8	111.6	110.0	107.3	108.9
1965	128.6	118.2	115.9	108.8	110.9
1966	137.5	123.8	119.8	111.0	114.8
1967	144.2	126.9	122.2	113.7	118.0
1968	152.1	128.7	122.0	118.1	124.7
1969	160.6	134.8	126.2	119.1	127.2
1970	167.4	137.2	127.1	122.0	131.7
1971 ^p	177.4	141.8	130.3	125.1	136.2
1972 ^p	188.1	146.8	133.7	128.1	140.7
Annual rate of change					
1961-66	6.7	4.4	3.7	2.2	2.8
1966-72	5.3	2.9	1.8	2.4	3.5
1961-72	5.9	3.6	2.6	2.3	3.2
Commercial goods-producing industries					
1962	109.4	101.5	101.8	107.7	107.5
1963	116.4	102.7	102.2	113.4	113.9
1964	125.2	105.5	104.4	118.7	120.0
1965	135.3	108.6	106.7	124.6	126.8
1966	145.4	110.7	108.1	131.3	134.5
1967	146.1	111.1	107.5	131.5	135.9
1968	155.4	110.1	105.7	141.2	147.0
1969	164.8	111.2	106.1	148.1	155.3
1970	166.3	108.5	102.8	153.3	161.7
1971 ^p	176.9	108.6	102.5	162.9	172.5
1972 ^p	184.6	109.0	102.3	169.3	180.4
Annual rate of change					
1961-66	7.7	2.1	1.6	5.4	6.0
1966-72	4.3	-0.4	-1.0	4.6	5.3
1961-72	5.5	0.8	0.1	4.7	5.4

21.15 Aggregate productivity trends, 1962-72 (1961 = 100) (concluded)

Year and industry	Output	Persons employed	Man-hours	Output per person employed	Output per man-hour
Commercial non-agricultural goods-producing industries					
1962	108.0	103.1	104.4	104.7	103.5
1963	114.1	105.2	106.3	108.4	107.3
1964	125.3	110.0	111.5	113.9	112.4
1965	136.2	116.0	117.8	117.4	115.6
1966	145.3	121.4	122.6	119.7	118.5
1967	149.2	121.1	121.3	123.2	123.0
1968	158.8	120.4	120.1	131.9	132.2
1969	168.4	122.5	121.2	137.4	138.9
1970	170.3	120.1	118.3	141.8	144.0
1971 ^D	179.7	120.3	117.8	149.4	152.6
1972 ^D	190.0	122.3	119.8	155.4	158.6
Annual rate of change					
1961-66	% 6.9	7.9	4.0	4.2	3.6
1966-72	% 4.6	—	-0.5	4.5	5.1
1961-72	% 5.9	1.8	1.5	4.0	4.3
Commercial service-producing industries					
1962	105.4	103.6	102.9	101.7	102.4
1963	111.3	107.2	105.7	103.8	105.3
1964	119.5	112.1	109.9	106.6	108.7
1965	127.9	118.6	115.4	107.9	110.9
1966	137.2	124.4	118.8	110.3	115.5
1967	144.9	128.9	123.0	112.4	117.8
1968	152.7	131.4	123.3	116.2	123.9
1969	162.1	138.8	128.9	116.8	125.7
1970	168.1	142.2	130.5	118.2	128.8
1971 ^D	177.8	147.3	134.1	120.7	132.5
1972 ^D	189.9	153.2	138.2	124.0	137.4
Annual rate of change					
1961-66	% 6.9	6.6	4.5	3.6	2.9
1966-72	% 5.4	—	3.5	2.5	2.9
1961-72	% 6.0	4.0	3.0	1.9	2.9

21.16 Consumer price indexes for specific groups, 1962-72 (1961 = 100)

Year	Food	Housing	Clothing	Transportation	Health and personal care	Recreation and reading	Tobacco and alcohol	All-items index
Group weight as a percentage of total ¹	27	32	11	12	7	5	6	100
1962	101.8	101.2	100.9	99.9	102.0	100.8	101.3	101.2
1963	105.1	102.3	103.4	99.9	104.6	102.2	101.5	103.0
1964	106.8	103.9	106.0	101.0	108.0	103.9	103.4	104.8
1965	109.6	105.8	107.9	104.8	113.0	105.6	105.1	107.4
1966	116.6	108.7	112.0	107.3	116.5	108.6	107.6	111.4
1967	118.1	113.4	117.6	111.8	122.5	114.1	110.4	115.4
1968	122.0	118.6	121.1	114.7	127.4	119.7	120.4	120.1
1969	127.1	124.7	124.5	120.0	133.6	126.8	125.0	125.5
1970	130.0	130.9	126.8	124.8	139.5	131.2	126.5	129.7
1971	131.4	136.8	128.7	129.9	142.4	135.6	128.6	133.4
1972	141.4	143.2	132.0	133.3	149.2	139.4	132.1	139.8

¹ Percentages based on 1957 family expenditures.**21.17 Consumer price index reclassified by goods and services, 1962-72 (1961 = 100)**

Year	Goods		Semi-durable	Durable ¹	Total	Total services	All-items index
	Non-durable	Other					
Group weight as a percentage of total ²	27	17	12	12	68	32	100
1962	101.8	100.8	100.9	99.1	100.9	101.7	101.2
1963	105.1	100.7	103.5	99.2	102.7	103.4	103.0
1964	106.8	102.1	105.9	98.3	104.0	106.3	104.8
1965	109.6	103.7	107.6	98.1	105.8	110.4	107.4
1966	116.6	106.4	111.4	98.1	109.8	114.3	111.4
1967	118.1	109.4	117.2	100.8	112.6	120.4	115.4
1968	122.0	115.2	120.9	102.4	116.8	126.7	120.1

21.17 Consumer price index reclassified by goods and services, 1962-72 (1961 = 100) (concluded)

Year	Goods		Semi-durable	Durable ¹	Total	Total services	All-items index
	Non-durable	Other					
	Food						
1969	127.1	119.2	124.2	103.4	120.5	135.1	125.5
1970	130.0	122.1	126.3	104.7	122.9	143.1	129.7
1971	131.4	125.9	127.9	106.4	125.1	150.1	133.4
1972	141.4	129.5	131.0	107.7	130.8	157.9	139.8

The previous supplementary classification (by type of commodity and service) has been revised. Historical series relating to the revised classification replace the previously published indexes.

¹ Includes such items as automobiles, furniture and floor coverings, and home entertainment and recreation equipment.

² Component weights indicate the relative importance of item groups and are based on 1957 family expenditures.

21.18 Consumer price indexes for regional cities, 1962-72

Year	1961 = 100										1969 = 100	
	St. John's, Nfld.	Hali-fax, NS	Saint John, NB	Mont-real, Que.	Ottawa, Ont.	Toronto, Ont.	Winnipeg, Man.	Saskatoon - Regina, Sask.	Edmonton - Calgary, Alta.	Vancouver, BC	Quebec, Que.	Thunder Bay, Ont.
1962	100.8	101.3	100.9	101.2	101.2	100.9	101.3	101.7	101.0	100.3	...	...
1963	102.8	102.3	102.5	102.9	102.9	102.6	102.2	102.5	102.1	101.9	...	...
1964	103.9	102.7	103.5	104.5	104.5	104.3	103.8	103.5	102.6	102.6	...	...
1965	105.5	104.6	105.1	106.7	106.3	106.9	106.1	105.2	104.1	104.5	...	...
1966	108.0	107.4	107.8	109.9	110.4	111.6	109.3	108.3	107.5	107.0	...	...
1967	110.9	109.9	111.1	114.2	113.1	114.9	113.3	111.3	111.8	111.0	...	...
1968	115.9	114.2	115.1	118.1	118.4	119.3	118.2	115.8	116.7	115.1	...	...
1969	119.3	119.5	119.8	121.8	123.1	124.1	123.1	119.7	121.5	119.0	100.0	100.0
1970	121.6	124.4	123.4	124.3	127.4	127.3	127.0	122.2	125.1	123.0	102.4	102.3
1971	123.5	126.3	125.2	126.6	130.7	129.4	128.6	123.4	128.2	127.0	104.2	103.9
1972	129.7	131.0	130.8	131.4	136.0	134.7	133.5	128.3	133.2	132.1	107.1	107.6

21.19 Percentage change in consumer price indexes in Canada and other countries, 1971-72

Country	% change	Country	% change
North America		United Kingdom	7
Canada	5	Africa	
Mexico (Mexico City)	6	Zaire (Kinshasa)	15
United States	3	Kenya (Nairobi)	6
South America		South Africa (European population)	6
Argentina (Buenos Aires)	58	Asia	
Brazil (Sao Paulo)	19	Sri Lanka (Colombo)	6
Chile (Santiago)	78	India	6
Europe		Indonesia (Djakarta)	6
Belgium	5	Korea, Republic of	12
Denmark	7	Pakistan (Karachi)	9
France	6	Australasia	
Germany, Federal Republic of	6	Australia	6
Greece	4	New Zealand	7
Ireland	9	Middle East	
Netherlands	8	Iran	6
Sweden	6	Israel	13
Switzerland	7	Turkey (Istanbul)	13

21.20 Intercity indexes of retail price differentials for selected groupings of commodities and services, as at May 1971 (Winnipeg May 1971 = 100)

Commodity grouping	City				
	St. John's, Nfld.	Charlotte-town, PEI	Halifax, NS	Saint John, NB	Montreal, Que.
Food at home	109	109	103	105	99
Household operation ¹	114	115	114	113	114
Clothing	105	101	99	104	99
Transportation	109	105	104	107	111
Health and personal care	101	102	112	104	98
Recreation and reading	97	101	104	103	102
Tobacco and alcohol	126	112	111	115	99
	Ottawa, Ont.	Toronto, Ont.	Regina, Sask.	Edmonton, Alta.	Vancouver, BC
Food at home	101	99	104	103	107
Household operation ¹	108	105	101	101	112
Clothing	98	96	102	98	102
Transportation	103	103	99	96	102
Health and personal care	116	112	101	114	118
Recreation and reading	98	101	95	100	104
Tobacco and alcohol	97	97	101	97	101

¹ Excludes fuel and lighting.

21.21 Patterns of family¹ expenditure on shelter and household durables, by family income, for eight cities, 1971

Item	All classes	Under \$3000	\$3,000-\$3,999	\$4,000-\$4,999	\$5,000-\$5,999	\$6,000-\$6,999	\$7,000-\$7,999	\$8,000-\$8,999	\$9,000-\$9,999	\$10,000-\$10,999	\$11,000-\$11,999	\$12,000-\$14,999	\$15,000 and over
Family characteristics													
Families in sample	No.	115	123	130	175	221	230	238	211	233	213	517	652
Weighted number of families		105.2	95.8	114.0	134.9	209.7	200.0	235.6	192.0	201.4	208.0	480.5	620.0
Average													
Family size	No.	2.46	3.06	3.39	3.12	3.26	3.30	3.65	3.69	3.86	3.62	3.75	4.10
Full-time earners	No.	0.05	0.10	0.31	0.66	0.70	0.85	0.87	1.00	1.11	1.07	1.26	1.45
Age of head	yr	50.8	54.9	50.9	45.9	46.6	45.8	44.6	41.7	41.2	44.0	42.5	44.9
Net income before taxes	\$	2,323.5	3,437.9	4,557.9	5,454.4	6,516.1	7,517.4	8,514.5	9,489.2	10,467.9	11,491.0	13,317.7	21,039.8
Other money receipts	\$	346.5	329.4	46.2	109.0	171.5	80.0	212.6	202.8	242.0	224.6	225.5	383.5
Net change in assets and liabilities	\$	-391.4	-363.3	-210.8	-322.6	-223.9	-118.7	140.7	266.9	87.0	200.2	725.4	1,796.5
Percentage													
Home-owners		55.0	33.8	34.2	45.2	37.0	46.3	47.3	51.0	58.7	60.0	60.4	75.1
Car or truck owners		76.6	32.1	43.8	56.8	68.3	68.4	72.4	78.8	80.1	87.5	89.1	94.5
Average dollar expenditure													
Shelter		1,060.5	1,154.1	1,253.3	1,388.6	1,490.3	1,334.1	1,609.8	1,629.9	1,780.7	1,891.6	1,885.5	2,524.2
Rented living quarters		662.3	695.3	751.0	656.7	804.9	617.7	689.6	709.5	649.2	636.5	669.2	509.8
Owned living quarters		166.2	209.2	235.6	430.6	388.0	414.7	568.6	580.0	734.6	854.6	815.4	1,314.2
Other housing		119.1	16.2	16.7	35.0	54.6	31.3	53.0	63.7	101.6	77.3	107.3	312.3
Water, power and fuel		302.9	243.9	250.1	266.3	242.8	270.4	298.7	276.6	295.4	323.1	293.5	387.8
Furnishings and equipment		107.6	133.2	205.1	263.2	278.8	297.1	322.5	414.7	500.3	501.3	561.7	814.2
Household appliances		109.3	30.0	53.6	57.8	65.6	75.8	91.2	98.4	119.0	121.4	132.7	165.9
Other		368.4	77.6	151.4	205.4	213.3	221.3	231.3	316.3	381.3	379.9	428.9	648.3
Vehicle purchase		530.4	13.9	99.6	271.0	254.8	437.5	427.6	532.2	635.7	440.7	626.0	910.8
Automobile and truck purchase		482.7	13.9	99.6	271.0	254.8	437.5	427.6	532.2	635.7	440.7	626.0	910.8
Other vehicle purchase		47.6	—	5.6	8.3	22.6	27.2	57.9	34.2	43.4	50.1	35.4	104.7
Recreation appliances ²		95.1	30.4	43.2	55.2	82.7	80.2	89.6	71.8	91.8	103.8	112.1	133.9
Total, shelter and household durables		2,907.5	1,212.5	1,382.9	1,975.1	2,106.6	2,148.9	2,449.7	2,648.6	3,008.5	2,937.4	3,185.2	4,383.2
Interest on personal loans		84.9	15.6	35.4	67.4	59.6	68.2	75.7	88.3	83.4	93.7	96.1	120.1

¹ Families of two or more persons.

² Radio and television receiving sets, record players and tape recorders.

21.22 Gross weighted industry selling price index (manufacturing)¹, 1962-72 (1961 = 100)

Year	Index	Year	Index	Year	Index
1962	101.1	1966	107.7	1970	119.1
1963	102.5	1967	109.8	1971	121.6
1964	103.3	1968	112.1	1972	127.4 ^d
1965	104.7	1969	116.3		

¹ The index measures the movements of prices of gross shipments of manufacturing industries, including inter-industry shipments between individual industries within manufacturing. Therefore, it duplicates the movements of some prices in the sense that, for example, flour prices are given full weight as part of the shipments of the flour mills industry and then are implicitly counted again through full weighting of the shipment prices of those manufacturing industries which use flour as an ingredient in their outputs, e.g., bread, biscuits, cakes, etc.

21.23 General wholesale index annual averages, 1949-72 (1935-39 = 100)

Year	Average	Year	Average	Year	Average	Year	Average
1949	198.3	1955	218.9	1961	233.3	1967	264.1
1950	211.2	1956	225.6	1962	240.0	1968	269.9
1951	240.2	1957	227.4	1963	244.6	1969	282.4
1952	226.0	1958	227.8	1964	245.4	1970	286.4
1953	220.7	1959	230.6	1965	250.4	1971	289.9
1954	217.0	1960	230.9	1966	259.5	1972	310.3

21.24 Index numbers of wholesale prices in Canada and other countries, 1970-72 (1963 = 100)

Country	1970	1971	1972	Country	1970	1971	1972
Belgium	118	117	122	India	166	172	186
Brazil	702	1,087	1,287	Ireland	139	147	162
Britain	126	133	140	Korea, Republic of	216	235	268
Canada	117	118	127	Netherlands	124	125	130
Chile	665	785	..	New Zealand	127	138	153
Denmark	127	132	138	Norway	123	129	133
France	124	127	133	Sweden	126	130	137
Germany, Federal Republic of	107	112	116	Switzerland	112	114	118
Greece	118	122	129	Turkey	146	169	199
				United States	117	120	126

21.25 Price indexes of residential and non-residential building materials and wage rates, 1962-72 (1961 = 100)

Year	Residential input indexes			Non-residential input indexes		
	Building materials	Labour	Total	Building materials	Labour	Total
1962	100.7	104.4	102.5	99.1	104.4	101.5
1963	104.1	108.1	106.0	101.8	108.1	104.6
1964	109.5	113.1	111.2	106.6	113.1	109.5
1965	115.8	118.6	117.1	111.5	118.6	114.7
1966	120.5	128.1	124.2	115.4	128.1	121.1
1967	125.3	140.8	132.8	117.8	140.8	128.2
1968	132.1	152.8	142.0	120.7	152.8	135.1
1969	139.2	164.5	151.4	126.1	164.5	143.3
1970	137.6	188.7	162.2	129.5	188.7	156.1
1971	144.4	214.8	177.8	134.1	213.1	169.6
1972	158.5	237.4	195.6	142.3	233.0	183.0

21.26 Highway construction price indexes, by province, and for all-items seven-province composite, years ended Mar. 31, 1962-71

Year	1961 = 100							1964 = 100
	Nfld.	NS	NB	Ont. ¹	Man.	Sask.	BC	Que.
1962	109.1	98.2	99.3	110.2	108.0	98.4	95.2	103.7
1963	101.1	95.9	102.2	126.5	120.2	102.7	96.9	110.6
1964	108.4	96.4	103.7	123.7	123.7	116.8	106.1	113.5
1965	119.5	116.8	103.2	144.0	133.3	144.4	127.7	130.9
1966	129.6	116.1	103.6	157.4	152.9	168.1	129.7	140.1
1967	115.2	122.7	103.0	156.3	153.8	137.6	119.4	135.1
1968	120.8	119.9	101.8	151.5	140.8	124.9	126.6	132.9
1969	116.5	123.1	102.2	154.0	144.6	132.1	143.2	138.0
1970	145.5	134.1	121.3	159.2	161.1	144.9	134.4	145.7
1971	176.2	148.3	114.8	164.5	159.7	147.1	139.0	151.9

¹ Direct comparisons should not be made between this index and the highway index published by the Ontario Ministry of Transportation and Communications; the item content is substantially different.

21.27 Price indexes of electrical utility distribution systems, transmission lines, transformer stations, and hydro-electric generating stations, 1962-72 (1961 = 100)

Year	Distribution systems			Transmission lines	Transformer stations			Hydro-electric generating stations
	Construction	Equipment	Total		Structures and improvements	Equipment	Total	
1962	102.5	100.4	101.8	100.9	102.6	105.9	105.1	102.7
1963	105.2	96.4	102.5	102.3	108.9	107.3	107.6	106.1 ^r
1964	107.7	97.6	104.6	102.7	112.9	111.9	112.0	109.6 ^r
1965	112.3	95.4	107.1	108.5	122.0 ^r	117.4	118.0 ^r	115.0 ^r
1966	118.4	99.0	112.4	113.0	130.2 ^r	120.4	122.4 ^r	122.1 ^r
1967	125.3	95.7	116.1	118.7	126.9 ^r	115.1	121.2	126.5 ^r
1968	126.3	91.8	115.6	121.9	124.2 ^r	106.7	117.2	131.6 ^r
1969	133.0	91.8	120.3	127.5	131.6 ^r	106.1	120.4	139.5 ^r
1970	144.5	95.4	129.3	136.5	139.2 ^r	119.4	132.5 ^r	148.3 ^r
1971	149.6	98.6	133.8	141.4	143.7	124.8	139.2	155.2
1972 ^p	158.2	99.1	139.9	147.2	149.4	125.4	142.8	164.5

21.28 Price indexes of machinery and equipment, 1963-72 (1968 = 100)

Year	Construction	Forestry (east of the Rockies)	Year	Construction	Forestry (east of the Rockies)
1963	84.8	...	1968	100.0	100.0
1964	87.3	...	1969	104.4	102.9
1965	89.2	...	1970	106.4	106.4
1966	92.1	...	1971	108.4	109.3
1967	94.7	...	1972	110.8	112.3

21.29 Index numbers of common and preferred stocks, 1962-72 (1961 = 100)

Year	Investors index				Mining index ¹	Preferred stocks ¹
	Total	Industrials	Utilities	Finance		
1962	96.4	96.6	97.9	94.3	103.7	101.5
1963	103.1	103.4	108.1	96.4	98.3	104.6
1964	120.8	125.9	122.2	98.9	109.3	105.8
1965	132.8	139.8	136.3	100.7	122.5	105.1
1966	125.3	132.9	129.4	89.9	121.1	94.1
1967	131.3	140.4	133.4	92.4	110.9	89.9
1968	135.2	143.7	131.8	104.1	119.5	79.9
1969	149.8	157.7	142.0	126.4	127.3	77.3
1970	137.7	145.5	126.3	118.1	113.5	67.7
1971	147.4	150.3	146.6	137.7	105.1	68.8
1972 ^p	174.6	179.3	155.3	180.7	111.8	70.9

¹ Not included in investors index.

21.30 Current account transactions between Canada and all countries, 1966-72 (million dollars)

Year	Current receipts		Current payments			Net balance on current account
	Merchandise	Other	Merchandise	Official contributions	Other	
1966	10,326	3,274	10,102	166	4,494	-1,162
1967	11,338	3,965	10,772	182	4,848	-499
1968	13,660	3,769	12,247	133	5,205	-156
1969	15,039	4,417	14,071	144	6,158	-917
1970	16,907	5,029	13,859	201	6,794	+1,082
1971	17,929	5,192	15,532	201	6,987	+401
1972	20,068	5,287	18,571	222	7,141	-579

21.31 Geographical distribution of the balance on current account between Canada and other countries, 1966-72 (million dollars)

Year	United States ¹	United Kingdom	Other countries	All countries
1966	-2,030	+425	+443	-1,162
1967	-1,342	+512	+331	-499
1968	-805	+425	+224	-156
1969	-838	+259	-338	-917
1970	-172	+716	+538	+1,082
1971	-193	+502	+92	+401
1972	-326	+301	-554	-579

¹ Includes all net exports of monetary gold for 1966 and 1967 only.

21.32 Canadian balance of international payments, by selected areas, 1970-72 (million dollars)

Item	All countries			United States			United Kingdom		
	1970P	1971P	1972P	1970P	1971P	1972P	1970P	1971P	1972P
CURRENT ACCOUNT									
Current receipts									
Merchandise exports (adjusted)	16,907	17,929	20,068	10,962	12,063	13,991	1,491	1,400	1,342
Service receipts									
Travel	1,234	1,283	1,226	1,082	1,129	1,022	44	42	..
Interest and dividends	528	557	616	336	360	361	29	28	..
Freight and shipping	1,126	1,184	1,260	590	660	723	125	117	..
Other service receipts	1,376	1,340	1,327	766	705	661	282	285	..
Total, service receipts	4,264	4,364	4,429	2,774	2,854	2,767	480	472	..
Total, exports of goods and services	21,171	22,293	24,497	13,736	14,917	16,758	1,971	1,872	..
Transfer receipts									
Inheritances and immigrants' funds	389	432	445	165	181	167	68	55	..
Personal and institutional remittances	107	118	128	66	76	84	12	12	..
Withholding tax	269	278	285	..	..	..	..	..	..
Total, current receipts	21,936	23,121	25,355	13,967	15,174	17,009	2,051	1,939	1,866
Current payments									
Merchandise imports (adjusted)	13,859	15,532	18,571	9,828	10,871	12,791	734	832	945
Service payments									
Travel	1,460	1,494	1,456	936	944	915	156	180	..
Interest and dividends	1,550	1,628	1,553	1,306	1,389	1,298	93	91	..
Freight and shipping	1,106	1,176	1,297	587	606	676	113	115	..
Other service payments	1,998	2,008	2,140	1,313	1,394	1,489	158	143	..
Withholding tax	269	278	285	..	..	..	..	..	..
Total, service payments	6,383	6,584	6,731	4,142	4,333	4,378	520	529	..
Total, imports of goods and services	20,242	22,116	25,302	13,970	15,204	17,169	1,254	1,361	..
Transfer payments									
Inheritances and emigrants' funds	199	185	185	114	105	103	49	43	..
Personal and institutional remittances	212	218	225	55	58	63	32	33	..
Official contributions	201	201	222	..	..	..	..	..	..
Total, current payments	20,854	22,720	25,934	14,139	15,367	17,335	1,335	1,437	1,565
Current account balance									
Merchandise trade	+3,048	+2,397	+1,497	+1,134	+1,192	+1,200	+757	+568	+397
Service transactions	-2,119	-2,220	-2,302	-1,368	-1,479	-1,611	-40	-57	..
Net transfers	+153	+224	+226	+62	+94	+85	-1	-9	..
Total, current account balance	+1,082	+401	-579	-172	-193	-326	+716	+502	+301
CAPITAL ACCOUNT									
Direct investment									
In Canada	+835	+885	+680	+575	+605	+562	+26	+41	..
Abroad	-295	-305	-385	-238	-183	-130	+17	-26	..
Portfolio transactions									
Canadian securities									
Outstanding bonds	-39	-94	+293	-69	-71	-4	+8	-13	..
Outstanding stocks	-145	-144	-63	-79	-41	-147	-43	-98	..
New issues	+1,227	+1,162	+1,816	+1,026	+862	+1,116	+123	+80	..
Retirements	-552	-804	-542	-395	-613	-406	-12	-49	..
Foreign securities									
Outstanding issues	+98	+244	+302	+81	+257	+271	+4	-5	..
New issues	-34	-63	-57	-20	-21	-12	..	..	..
Retirements	+10	+10	+9	+5	+5	+4	..	..	..
Loans and subscriptions,									
Government of Canada									
Advances	-144	-192	-261	..	..	..	..	..	..
Repayments	+36	+36	+28	..	..	..	+20	+21	..
Columbia River Treaty	+31	+24	..	+31	+24	..	..	..	..
Export credits directly or indirectly at risk of the Government of Canada	-129	-230	-250	+1	-1	-6	..	-7	..
Other long-term capital transactions	-157	-135	+203	-104	-95	+67	+18	+29	..
Balance of capital movements in long-term forms	+742	+394	+1,773	+814	+728	+1,315	+161	-27	+3
Resident holdings of foreign currency bank balances and other short-term funds abroad	-424	+874	+565	-122	+1,686	+320	-200	-232	..
Non-resident holdings of Canadian:									
Dollar deposits	+26	+92	+136	+44	+22	+7	-31	+9	..
Government demand liabilities	-8	+50	+27	..	..	..	..	..	..
Treasury bills	+52	-3	+21	-4	..	-1	-8	-1	..
Commercial paper	-73	+37	-114	+50	+39	-114	+1	-1	..
Finance company paper	+193	-32	-100	+116	+38	-101	+15	-10	..
Other short-term paper	+49	+75	-3	+48	+75	-3	..	+2	..
Other finance company obligations	-103	-29	-21	-105	-25	-28	+7	+1	..
Other short-term capital transactions	-6	-1,082	-1,489	+12	-1,064	-1,433	+49	-33	..
Balance of capital movements in short-term forms	-294	-18	-978	+39	+771	-1,353	-167	-265	+318
Total, net capital balance	+448	+376	+795	+853	+1,499	-38	-6	-292	+321
Balance settled by exchange transfers	..	..	..	+771	-247	..	-793	-212	..
Allocation of Special Drawing Rights	+133	+119	+117	..	..	..	..	..	..
Net official monetary movements									
Official international reserves	+1,662	+896	+333	+1,452	+1,059	..	-83	-2	..
Official monetary liabilities	+1	..	..	..	..	..	..	..	..
Net official monetary movements	+1,663	+896	+333	+1,452	+1,059	..	-83	-2	..

21.33 Canadian balance of international indebtedness, selected years, 1939-69 (billion dollars)

Item	1939	1949	1959	1967	1968	1969 ^r
CANADIAN LIABILITIES						
Direct investment	2.3	3.6	11.9	20.7	22.5	24.5
Government bonds	1.7	1.8	3.1	5.8	6.8	7.8
Other portfolio investment	2.6	2.3	4.6	5.8	6.1	6.8
Miscellaneous investment	0.3	0.3	1.3	2.4	2.6	2.7
Total, foreign long-term investment in Canada	6.9	8.0	20.9	34.7	38.0	41.7
Non-resident equity in Canadian assets abroad	0.2	0.3	1.0	1.7	2.0	2.2
Official Special Drawing Rights liabilities	...	...	...	...	...	...
Total, long-term liabilities	7.1	8.3	21.8	36.4	39.9	43.8
Non-resident holdings of Canadian dollars	0.3	0.4	0.5	0.7	0.8	0.9
Gross liabilities ¹	7.4	8.7	22.4	37.1	40.7	44.7
United States ¹	4.5	6.4	17.0	29.7	32.4	35.1
United Kingdom ¹	2.6	1.8	3.4	3.9	4.0	4.3
Other countries ^{1,2}	0.3	0.5	2.1	3.5	4.4	5.4
Short-term payables (not included elsewhere) ^{3,4}						
Finance company obligations	...	0.6	1.4	1.0	0.9	1.2
Other	...	...	...	2.1	1.5	1.3
Gross liabilities	7.4 ¹	9.3	23.8	40.2	43.2	47.2
CANADIAN ASSETS						
Direct investment	0.7	0.9	2.3	4.0	4.6	5.1
Portfolio investment	0.7	0.6	1.2	2.6	2.9	3.0
Miscellaneous investment ⁵	—	—	—	0.7	0.6	0.7
Government of Canada credits ⁶	—	2.0	1.5	1.4	1.4	1.4
Government of Canada subscriptions to international investment agencies	—	0.1	0.1	0.2	0.2	0.2
Total, Canadian long-term investment abroad	1.4	3.7	5.0	8.9	9.8	10.4
Net official monetary assets	0.5	1.3	1.9	2.9	3.3	3.3
Other Canadian short-term holdings of foreign exchange	—	0.1	1.0	2.6	3.0	4.6
Gross assets ¹	1.9	5.1	8.0	14.5	16.1	18.4
Net official monetary assets	0.5	1.3	1.9	2.9	3.3	3.3
United States ^{1,7}	0.9	1.3	3.3	7.2	8.2	9.4
United Kingdom ^{1,7}	0.1	1.6	1.4	2.4	2.8	4.1
Other countries ^{1,7}	0.4	0.9	1.3	2.0	1.8	1.5
Short-term receivables (not included elsewhere) ³	...	0.2	0.5	0.5	0.7	0.5
Gross assets	1.9 ¹	5.3	8.5	14.9	16.8	18.9
Canadian net international indebtedness	5.5 ¹	4.0	15.3	25.3	26.4	28.3
Net official monetary assets	-0.5	-1.3	-1.9	-2.9	-3.3	-3.3
United States	3.6	5.1	13.6	22.5	24.2	25.4
United Kingdom	2.5	0.2	1.9	1.5	1.2	0.3
Other countries	-0.1	-0.4	0.8	1.6	2.5	3.8
Short-term (not included elsewhere)	...	0.4	1.0	2.7	1.8	2.2

¹ Includes short-term receivables and payables.² Includes international investment agencies.³ Country distribution not available.⁴ At the end of 1964 about \$450 million previously classified as long-term investment was shown as part of short-term finance company obligations.⁵ Includes medium-term non-marketable United States government securities acquired under the Columbia River Treaty arrangements since 1964.⁶ Includes export credits by government and private sectors less reserve against government inactive assets.⁷ Excludes net official monetary assets.**21.34 Foreign capital invested in Canada, by type of investment, classified by estimated distribution of ownership, as at Dec. 31, 1968 and 1969 (million dollars)**

Year and type of investment	Estimated distribution of ownership			Total investments of non-residents
	United States ¹	United Kingdom ¹	Other countries	
1968				
Government securities				
Government of Canada	446	23	310	779
Provincial	4,151	132	269	4,552
Municipal	1,425	27	39	1,491
Total, government securities	6,022	182	618	6,822
Utilities				
Railways	425	410	142	977
Other (excluding public enterprises)	894	71	33	998
Total, public utilities	1,319	481	175	1,975
Manufacturing	9,029	1,050	552	10,631
Petroleum and natural gas	5,296	549	605	6,450
Other mining and smelting	3,002	218	333	3,553
Merchandising	1,121	323	138	1,582
Financial	2,462	651	616	3,729
Other enterprises	548	74	51	673
Miscellaneous investments	1,710 ²	178	676	2,564
Total, investments, 1968	30,509	3,706	3,764	37,979
1969				
Government securities				
Government of Canada	419	35	304	758
Provincial	4,664	130	638	5,432
Municipal	1,414	25	133	1,572
Total, government securities	6,497	190	1,075	7,762

21.34 Foreign capital invested in Canada, by type of investment, classified by estimated distribution of ownership, as at Dec. 31, 1968 and 1969 (million dollars) (concluded)

Year and type of investment	Estimated distribution of ownership			Total investments of non-residents
	United States ¹	United Kingdom ¹	Other countries	
Utilities				
Railways	450	396	141	987
Other (excluding public enterprises)	1,008	83	53	1,144
Total, public utilities	1,458	479	194	2,131
Manufacturing	9,858	1,051	750	11,659
Petroleum and natural gas	5,859	556	750	7,165
Other mining and smelting	3,054	253	388	3,695
Merchandising	1,277	350	135	1,762
Financial	2,589	738	650	3,977
Other enterprises	677	80	63	820
Miscellaneous investments	1,762 ²	165	770	2,697
Total, investments, 1969	33,031	3,862	4,775	41,668

Common and preferred stocks are at book values as shown in the balance sheets of the issuing companies; bonds and debentures are valued at par; and liabilities in foreign currencies are converted into Canadian dollars at par of exchange.

¹ Includes some investments held for residents of other countries.

² Includes Columbia River Treaty receipts.

21.35 Canadian long-term investment abroad,¹ by location and by type of investment, selected years, 1939-70 (million dollars)

Location and type of investment	1939	1945	1949	1959	1968	1969	1970
United States							
Direct investment	412	455	721	1,489	2,546	2,856	3,127
Portfolio investment							
Stocks	380	317	345	734	2,103	2,165	2,110
Bonds	121	92	98	111	180	183	224
Miscellaneous investment ²	..	5	6	15	101	115	144
Government of Canada credits ³	—	—	—	—	90	58	26
Government of Canada subscriptions to international investment agencies	—	—	—	—	—	—	—
Total, United States	913	869	1,170	2,349	5,020	5,377	5,631
United Kingdom							
Direct investment	59	54	59	235	570	595	586
Portfolio investment							
Stocks	22	26	21	25	56	59	61
Bonds	21	27	19	12	20	21	20
Miscellaneous investment	..	16	13	16	30	34	54
Government of Canada credits ⁴	—	561	1,443	1,108	1,058	1,038	1,018
Government of Canada subscriptions to international investment agencies	—	—	—	—	—	—	—
Total, United Kingdom	102	684	1,555	1,396	1,734	1,747	1,739
Other Commonwealth countries ⁵							
Direct investment	54	69	76	291	700	725	791
Portfolio investment							
Stocks	7	7	6	8	14	14	17
Bonds	15	12	8	19	27	27	23
Miscellaneous investment	..	..	..	..	..	..	..
Government of Canada credits	..	..	..	35	77	141	245
Government of Canada subscriptions to international investment agencies	—	—	—	—	—	—	—
Total, other Commonwealth countries	76	88	90	353	818	907	1,076
Other countries							
Direct investment	146	142	70	271	801	912	1,560
Portfolio investment							
Stocks	102	104	105	167	251	264	56
Bonds	51	36	36	107	250	223	207
Miscellaneous investment ²	..	—29	12	—51	498	536	659
Government of Canada credits	31	146	566	352	208	211	205
Government of Canada subscriptions to international investment agencies	—	—	71	65	209	239	268
Total, other countries	330	399	860	911	2,217	2,385	2,955
All countries							
Direct investment	671	720	926	2,286	4,617	5,088	6,064
Portfolio investment							
Stocks	511	454	477	934	2,424	2,502	2,244
Bonds	208	167	161	249	477	454	474
Miscellaneous investment ²	..	—8	31	—20	629	685	857
Government of Canada credits ⁶	31	707	2,009	1,495	1,433	1,448	1,494
Government of Canada subscriptions to international investment agencies	—	—	71	65	209	239	268
Total, all countries	1,421	2,040	3,675	5,009	9,789	10,416	11,401

¹ Includes equity of non-residents in assets abroad of Canadian companies but excludes investment of insurance companies and banks (held mainly against liabilities to non-residents).

² Negative amounts arise from the application of reserves against government inactive assets and short positions of Canadian financial institutions.

³ Medium-term non-marketable United States government securities acquired under the Columbia River Treaty arrangements are shown from 1964.

⁴ Includes deferred interest on the United Kingdom 1946 loan agreement starting from 1956 and amounting to \$101 million in 1970.

⁵ Includes investment in Newfoundland prior to 1949.

⁶ Includes United Nations bonds from 1962, which amounted to \$5 million in 1970.

21.36 Summary of financial flows accounts matrix, 1971 and 1972 (million dollars)

Year and category	Financial institution						Governments			
	Monetary authorities		Chartered banks and other lending institutions ¹		Other financial institutions ²		Federal government ³		Provincial and local governments ⁴	
	Use	Source	Use	Source	Use	Source	Use	Source	Use	Source
1971										
Gross domestic saving	—	1	—	392	—	243	—	1,293	—	2,456
Non-financial capital acquisition	2	—	114	—	206	—	522	—	3,435	—
Net lending or borrowing	—	-1	—	278	—	37	—	771	—	-979
Discrepancy	—	-4	—	-3	—	27	—	-82	—	-468
Net increase in financial assets	1,500	—	8,506	—	4,370	—	3,967	—	2,075	—
Net increase in liabilities	—	1,497	—	8,225	—	4,360	—	3,114	—	2,586
Net financial investment	—	3	—	281	—	10	—	853	—	-511
Official international reserves	896	—	—	—	—	—	—	—	—	—
Canadian currency and deposits	—	658	806	7,929	67	51	762	25	212	—
Foreign currency and deposits	—	—	-90	—	-9	—	1	—	12	—
Consumer credit	—	—	1,185	—	31	—	—	—	—	—
Other receivables or payables	—	—	—	-6	45	-17	1	2	35	92
Bank and other loans	3	—	2,426	-53	379	553	423	48	113	47
Short-term debt instruments ⁶	264	—	-50	-98	177	-29	11	205	17	—
Mortgages	—	—	2,129	5	967	5	8	—	273	11
Canadian bonds	311	—	1,957	207	1,583	32	443	2,571	514	2,273
Life insurance and pensions	—	—	—	—	—	2,324	—	-11	—	—
Claims on associated enterprises	44	847	-65	-47	187	1,159	2,106	14	648	51
Canadian stocks	—	—	28	25	917	-111	24	—	—	—
Foreign securities	—	—	7	—	-5	—	-25	—	—	—
Other assets or liabilities	-18	-8	173	263	31	393	213	260	251	112
Official monetary reserve offsets	—	—	—	—	—	—	—	—	—	—
1972										
Gross domestic saving	—	1	—	532	—	198	—	893	—	2,093
Non-financial capital acquisition	3	—	114	—	165	—	659	—	3,639	—
Net lending or borrowing	—	-2	—	418	—	33	—	234	—	-1,546
Discrepancy	—	-2	—	28	—	14	—	25	—	-265
Net increase in financial assets	1,103	—	9,292	—	4,772	—	2,707	—	2,251	—
Net increase in liabilities	—	1,103	—	8,902	—	4,753	—	2,498	—	3,532
Net financial investment	—	—	—	390	—	19	—	209	—	-1,281
Official international reserves	333	—	—	—	—	—	—	—	—	—
Canadian currency and deposits	—	840	824	7,633	122	41	271	26	307	—
Foreign currency and deposits	—	—	-122	—	11	—	-8	—	115	—
Consumer credit	—	—	1,972	—	27	—	—	—	—	—
Other receivables or payables	—	—	—	6	38	23	-3	46	-7	85
Bank and other loans	—	—	3,441	4	470	449	322	26	47	283
Short-term debt instruments ⁶	45	—	129	312	612	75	5	330	12	—
Mortgages	—	—	3,470	13	992	8	-3	—	144	9
Canadian bonds	545	—	51	504	1,772	55	965	1,260	451	3,008
Life insurance and pensions	—	—	—	—	—	2,634	—	-2	—	—
Claims on associated enterprises	72	138	36	38	230	1,373	1,063	80	981	127
Canadian stocks	—	—	19	147	674	-268	23	—	-24	—
Foreign securities	—	—	-27	—	-214	—	2	—	—	—
Other assets or liabilities	108	125	-501	245	38	363	70	732	225	20
Official monetary reserve offsets	—	—	—	—	—	—	—	—	—	—

¹ Other lending institutions are Quebec savings banks, credit unions, caisses populaires, mortgage and trust companies and sales finance and consumer loan companies.

² Insurances, trustee pension funds, and other private and public financial institutions.

³ Includes Canada Pension Plan.

⁴ Includes hospitals and Quebec Pension Plan.

21.36 Summary of financial flows accounts matrix, 1971 and 1972 (million dollars) (concluded)

Year and category	Non-financial corporations ⁵		Persons, unincorporated business and residual		Rest of the world		Total	
	Use	Source	Use	Source	Use	Source	Use	Source
1971								
Gross domestic saving	—	8,847	—	7,502	—	-30	—	20,704
Non-financial capital acquisition	11,965	—	4,228	—	232	—	20,704	—
Net lending or borrowing	—	3,118	—	3,274	—	-262	—	—
Discrepancy	—	552	—	-157	—	135	—	—
Net increase in financial assets	4,037	—	7,526	—	106	—	32,087	—
Net increase in liabilities	—	7,707	—	4,095	—	503	—	32,087
Net financial investment	—	-3,670	—	3,431	—	-397	—	—
Official international reserves	—	—	—	—	—	896	896	—
Canadian currency and deposits	743	—	5,919	—	154	—	8,663	8,663
Foreign currency and deposits	-209	—	-594	—	—	-889	-889	-889
Consumer credit	98	—	9	1,323	—	—	1,323	1,323
Other receivables or payables	1,705	1,190	—	525	—	—	1,786	1,786
Bank and other loans	78	1,233	—	1,296	88	386	3,510	3,510
Short-term debt instruments ⁶	-47	304	32	—	-22	—	382	382
Mortgages	69	672	—	2,753	—	—	3,446	3,446
Canadian bonds	57	2,325	2,286	29	286	—	7,437	7,437
Life insurance and pensions	—	—	2,313	—	—	—	2,313	2,313
Claims on associated enterprises	610	710	-1,831	-1,831	859	305	2,558	1,208
Canadian stocks	73	625	-1,724	—	-129	—	-811	539
Foreign securities	48	—	-243	—	—	-218	-218	-218
Other assets or liabilities	812	648	1,359	—	-1,130	23	1,691	1,691
Official monetary reserve offsets	—	—	—	—	—	—	—	—
1972								
Gross domestic saving	—	10,396	—	8,038	—	818	—	22,969
Non-financial capital acquisition	13,620	—	4,509	—	260	—	22,969	—
Net lending or borrowing	—	-3,224	—	3,529	—	558	—	—
Discrepancy	—	-87	—	313	—	-26	—	—
Net increase in financial assets	3,741	—	9,145	—	987	—	33,998	—
Net increase in liabilities	—	6,878	—	5,929	—	403	—	33,998
Net financial investment	—	-3,137	—	3,216	—	584	—	—
Official international reserves	—	—	—	—	—	333	333	333
Canadian currency and deposits	436	—	6,477	—	103	—	8,540	8,540
Foreign currency and deposits	63	—	64	—	—	123	123	123
Consumer credit	107	—	34	2,140	—	—	2,140	2,140
Other receivables or payables	1,339	1,614	—	-407	—	—	1,367	1,367
Bank and other loans	93	1,953	—	1,421	246	483	4,619	4,619
Short-term debt instruments ⁶	122	-241	-257	—	-192	—	476	476
Mortgages	100	280	—	4,393	—	—	4,703	4,703
Canadian bonds	-18	1,833	1,389	47	1,552	—	6,707	6,707
Life insurance and pensions	—	—	2,632	—	—	—	2,632	2,632
Claims on associated enterprises	941	679	-1,665	-1,665	672	385	2,330	1,155
Canadian stocks	334	322	-1,981	—	-19	—	-974	201
Foreign securities	-129	—	95	—	—	-273	-273	-273
Other assets or liabilities	353	438	2,357	—	-1,375	-648	1,275	1,275
Official monetary reserve offsets	—	—	—	—	—	—	—	—

⁵ Includes government enterprises.⁶ Includes Government of Canada treasury bills.

Sources

21.1 - 21.9 Gross National Product Division, System of National Accounts (Current) Branch, Statistics Canada.

21.10 - 21.13 Industry Product Division, System of National Accounts (Current) Branch, Statistics Canada.

21.14 - 21.15 Structural Analysis and Productivity Research Division, System of National Accounts (Structural) Branch, Statistics Canada.

21.16 - 21.29 Prices Division, General Statistics Branch, Statistics Canada; 21.19 and 21.24 United Nations *Monthly Bulletin of Statistics*.

21.30 - 21.36 Balance of Payments Division, System of National Accounts (Current) Branch, Statistics Canada.

Appendix 1

Functions of government organizations and related agencies

A summary organization chart of the federal government appears in Chapter 4. A detailed chart is available from Information Canada.

Agricultural Products Board. The Agricultural Products Board was established under authority of the Emergency Powers Act by Order in Council PC 3415 of July 31, 1951, to administer contracts with other countries to buy, or sell, agricultural products, and to carry out other commodity operations as considered necessary or desirable as determined by Canada's needs and requirements. The Board was re-established under the Agricultural Products Board Act in 1952 and operates now under RSC 1970, c.A-5.

The Board is a part of the Canada Department of Agriculture.

Agricultural Stabilization Board. Established in 1958 as a Crown corporation under the Agricultural Stabilization Act (RSC 1970, c.A-9), the Board is empowered to stabilize prices of agricultural products both to assist the industry in realizing fair returns for labour and investment and to maintain a fair relationship between the prices received by farmers and the costs of goods and services that they buy. Programs under the Act are administered by Board staff with assistance from the Canada Department of Agriculture. The Board reports to Parliament through the Minister of Agriculture.

Air Canada. Formerly Trans-Canada Air Lines, Air Canada was incorporated by Act of Parliament in 1937 (RSC 1970, c.A-11) to provide a publicly owned air transportation service, with powers to carry on its business throughout Canada and outside Canada. The corporation now maintains passenger, mail and commodity traffic services over nation-wide routes as well as services to the United States, Britain, Ireland, Belgium, France, Switzerland, the Federal Republic of Germany, Austria, Denmark, the USSR, Czechoslovakia, Bermuda, the Bahamas, Jamaica, Antigua, Barbados and Trinidad. Air Canada is responsible to Parliament through the Minister of Transport.

Anti-dumping Tribunal. Under the Anti-dumping Act (RSC 1970, c.A-15, as amended by SC 1970-71, c.3), the Anti-dumping Tribunal is declared to be a court of record and makes formal inquiry into the impact of dumping on production in Canada. Within 90 days of a preliminary determination of dumping by the Deputy Minister of National Revenue for Customs and Excise, the Tribunal must make an order or finding on the question of injury, threat of injury or material retardation to production in Canada of like goods. Decisions of the Tribunal are final and conclusive except as provided for under Section 28 of the Federal Court Act (SC 1970, c.1). In addition, the Governor in Council may request the Tribunal to investigate and report on any matter relative to the importation of goods into Canada that may cause or threaten injury to the production of any goods in this country.

The Tribunal consists of a chairman and not more than four other members. Its offices are located in Ottawa and it may conduct hearings in other centres in Canada. The Tribunal reports to Parliament through the Minister of Finance.

Army Benevolent Fund Board. The Army Benevolent Fund Board, established by the Army Benevolent Fund Act (RSC 1970, c.A-16), administers the Army Benevolent Fund, a special account set up in the Consolidated Revenue Fund. The Board awards grants from the special account to veterans or their dependants for relief, if none is available from government sources, and for educational assistance, contingent on need and continued progress. The Board has five members appointed by the Governor in Council, one of whom is nominated by the Royal Canadian Legion and one by the National Council of Veterans Associations in Canada. Head office is in Ottawa. The Board reports to Parliament through the Minister of Veterans Affairs.

Atlantic Development Council. Created under the 1969 Government Organization Act (SC 1968/69, c.28), the Atlantic Development Council is composed of 11 members representative of the area appointed by the Governor in Council to advise the Minister of Regional Economic Expansion on plans and policies for economic expansion and social adjustment in the Atlantic Provinces, and to carry out feasibility studies and evaluate policies or programs submitted within the framework of an over-all strategy for the development of the region.

The Council reports to Parliament through the Minister of Regional Economic Expansion.

Atomic Energy Control Board. By Act of Parliament (RSC 1970, c.A-19) proclaimed October 1946, the regulation and control of atomic energy in Canada was placed under the Atomic Energy Control Board. The Board reports to Parliament through the Minister of Energy, Mines and Resources.

Atomic Energy of Canada Limited. This Crown company was incorporated in February 1952 under the Atomic Energy Control Act, 1946 (RSC 1970, c.A-19) to take over from the National Research Council on April 1, 1952 the operation of the Chalk River project. The main activities of the company are: the development of economic nuclear power; scientific research and development in the atomic energy field;

the operation of nuclear reactors; and the production of radioactive isotopes and associated equipment such as cobalt-60 beam therapy units for the treatment of cancer. The company reports to Parliament through the Minister of Energy, Mines and Resources.

Bank of Canada. Legislation of 1934 (RSC 1970, c.B-2) provided for the establishment of a central bank in Canada to regulate credit and currency, to control and protect the external value of the Canadian dollar and to stabilize the level of production, trade, prices and employment as far as may be possible within the scope of monetary action. The Bank acts as the fiscal agent of the Government of Canada, manages the public debt and has the sole right to issue notes for circulation in Canada. It is managed by a board of directors appointed by the government and composed of a governor, a deputy governor and 12 directors; the Deputy Minister of Finance is also a member of the board. The Bank reports to Parliament through the Minister of Finance.

Bilingual Districts Advisory Board. The Official Languages Act (RSC 1970, c.O-2) requires the creation of federal bilingual districts, in which federal services will be provided in English and French. For a territory to be declared a bilingual district, the two official languages must be spoken by residents of the area and at least 10% of the total population must speak a mother tongue which is the official language of the linguistic minority within the area. An area may be considered a federal bilingual district, even if it does not reach the required percentage, if federal services were already available in both official languages before the Act came into force. To determine the boundaries of these districts, the Act requires the federal government to set up an Advisory Board of five to ten members, representing the several provinces or regions of Canada. The Board must be constituted as soon as possible after each decennial census and makes recommendations to the Cabinet based on census statistics. Its report is submitted to the Governor in Council who presents it to Parliament through the Secretary of State.

Blue Water Bridge Authority. The Bridge Authority was created by the Blue Water Bridge Authority Act (SC 1964, c.6). It is responsible for the operation of the Canadian portion of the bridge spanning the St. Clair River from Point Edward, Ont. to Port Huron, Mich. and has wide powers to perform all things necessary for not only the present bridge but for any future bridge at this site. It may acquire that portion of the bridge and its approaches etc., as may be granted by Her Majesty in right of Canada and the appropriate authority in the United States. Tolls set are subject to the approval of the Canadian Transport Commission. The Authority is a non-profit organization and all toll moneys must be used for the operation and maintenance of the present bridge or for the building of a new one. It is not an agent of the Crown but members of the Authority are appointed by the Governor in Council on the recommendation of the Minister of Transport with terms of office ranging from one to four years.

Board of Examiners for Dominion Land Surveyors. Established under the Canada Lands Survey Act (RSC 1952, c.26), the Board examines candidates: for admission as articulated pupils; for commissions as Dominion Land Surveyors; or for certificates as Dominion Topographical Surveyors. It is also responsible for the discipline of Dominion Land Surveyors. The Board has three members appointed by the Governor in Council, one of whom, the chairman, is the Surveyor General of Canada; it is part of the Department of Energy, Mines and Resources.

Bureau of Pensions Advocates. The Bureau was established under the Minister of Veterans Affairs by the amendments to the Pension Act 1971 (SC 1970-71, c.31). It is not part of the Department of Veterans Affairs, but provides an independent professional legal aid service to applicants for awards under the Pension Act. The Bureau's head office is in Ottawa; there are district offices in major centres across Canada.

Canada Council. The Council was established by Order in Council dated April 15, 1957, under the terms of the Canada Council Act (RSC 1970, c.C-2) assented to March 28, 1957. It is composed of a chairman, a vice-chairman and 19 other members, a director and an associate director. The function of the Council is to encourage the arts, humanities and social sciences in Canada, mainly through a broad program of fellowships and grants. Its principal sources of income are an annual grant from the government, which amounted to \$26 million for the year ended March 31, 1972 and an Endowment Fund, originally of \$50 million, which has an annual yield of approximately \$5 million. In the making, managing and disposing of investments under the Act, the Council has the advice of an investment committee of five, including the chairman and another member of the Council. The proceedings of the Council are reported each year to Parliament through the Secretary of State.

Canada Deposit Insurance Corporation. The Corporation was established by legislation (RSC 1970, c.C-3), which received Royal Assent on February 17, 1967. It is empowered to insure Canadian currency deposits other than those belonging to the Government of Canada, up to \$20,000 per person, in banks, federally incorporated trust and loan companies that accept deposits from the public, and in similar provincially incorporated institutions that are authorized by their provincial governments to apply for such insurance. The Corporation is also empowered to act as a lender of last resort for member institutions. The board of the Corporation comprises a chairman, appointed by the Governor in Council, and four other directors

who hold the positions of Governor of the Bank of Canada, Deputy Minister of Finance, Superintendent of Insurance and Inspector General of Banks. It reports to Parliament through the Minister of Finance.

Canada Development Corporation. The Corporation was established in 1971 by the Canada Development Corporation Act (SC 1970-71, c. 49). The purpose of the Corporation is to develop and maintain strong Canadian controlled and managed corporations in the private sector of the economy and to give Canadians greater opportunities to invest and participate in the economic development of Canada. Its affairs are administered by a board of 21 directors. The authorized capital of the Corporation consists of 200 million common shares without par value and 1,000 million preferred shares. At the end of 1972, 13.6 million common shares had been issued. During 1972, the Corporation acquired all the shares of Polymer Corporation Limited and Connaught Laboratories Limited and a 36% interest in Venturetek International Limited. The Corporation is also a participant in the Gas-Arctic Northwest Project Study Group. The Corporation is not an agency of the Crown and is not subject to the provisions of the Financial Administration Act.

Canada Emergency Measures Organization. The Canada Emergency Measures Organization was established by Cabinet in June 1957 to assume leadership in the development, in peacetime, of civil plans and arrangements designed to ensure the nation's capability to survive and recover from any national emergency. The Orders in Council PC 1959-656 and PC 1963-993, which originally set out the specific functions of the Organization, were replaced by Order in Council PC 1965-1580. The Organization reports to Parliament through the Minister of National Defence.

Canada Labour Relations Board. Established under authority of the Canada Labour Code (RSC 1970, c.L-1), the Canada Labour Relations Board administers Labour Code provisions concerning the certification of trade unions as bargaining agents and the writing of procedures into collective agreements to settle disputes about the meaning or violation of such agreements. The Board consists of a chairman, a vice-chairman and not more than eight members equally representative of employees and employers, appointed by the Governor in Council to hold office during pleasure. It reports to Parliament through the Minister of Labour.

Canada Manpower and Immigration Council. Operating under RSC 1970, c.C-4, the Canada Manpower and Immigration Council consists of a chairman and not more than 15 members appointed by the Governor in Council. The Council advises the Minister of Manpower and Immigration on all matters pertaining to the effective utilization and development of manpower resources in Canada, including immigrants to Canada and their adjustment to Canadian life.

Canadian Arsenals Limited. The principal function of this Crown corporation is to operate the government-owned facilities for the production of certain defence materiel. It was established under the Companies Act by Letters Patent dated September 20, 1945, and is subject to the Government Companies Operation Act (RSC 1970, c.G-7) and certain provisions of the Financial Administration Act (RSC 1970, c.F-10). It reports to Parliament through the Minister of Supply and Services.

Canadian Broadcasting Corporation. The CBC was established by Act of Parliament in 1936, replacing an earlier public broadcasting agency, the Canadian Radio Broadcasting Commission, created in 1932. The Broadcasting Act of 1968 (RSC 1970, c.B-11) describes the CBC as "established by Parliament for the purpose of providing the national broadcasting service".

The Corporation has a president and 14 other directors appointed by the Governor in Council. The president is the chief executive officer. The executive vice-president is appointed by the Corporation on the recommendation of the president and with the approval of the Governor in Council. He is responsible to the president for the management of broadcasting operations in accordance with policies prescribed by the Corporation.

CBC operations are financed by public funds voted annually by Parliament, with supplementary revenue obtained from commercial advertising. The CBC's accounts are audited annually by the Auditor General of Canada and the Corporation reports to Parliament through the Secretary of State of Canada.

Canadian Commercial Corporation. Established in 1946 by Act of Parliament (RSC 1970, c.C-6), the Canadian Commercial Corporation is wholly owned by the Government of Canada. Initially it assumed the undertaking of the (then) Canadian Export Board covering procurement in Canada of goods and services on behalf of foreign governments and United Nations relief agencies. In 1947 responsibility for procurement of the requirements of the Department of National Defence was transferred from the Department of Reconstruction and Supply to the Corporation which fulfilled these additional functions until the formation of the Department of Defence Production in 1951. In 1963 the staff of the Corporation was integrated with that of the Department of Defence Production, now part of the Department of Supply and Services, which provides all the management and services required by the Corporation.

The Corporation continues to act primarily as the Canadian government contracting and procurement agency on behalf of foreign countries purchasing defence or other supplies and services from Canada on a government-to-government basis. It is also in a position to assist persons in Canada to obtain goods and

commodities from outside Canada and to dispose of goods and commodities that are available for export from Canada. It reports to Parliament through the Minister of Supply and Services.

Canadian Consumer Council. The Council was established in 1968 under RSC 1970, c.C-27 to advise the Minister of Consumer and Corporate Affairs on all facets of consumerism. It meets several times a year, has 19 members representing all segments of the population and all areas of Canada. Although supported financially by the Department of Consumer and Corporate Affairs, it is independent and reports to Parliament through the Minister.

Canadian Council on Rural Development. Created under the Agricultural and Rural Development Act (RSC 1970, c.A-4), the Canadian Council on Rural Development is a 31-member agency established to advise the Minister of Regional Economic Expansion on rural development policies, and to provide a forum for public information and discussion on rural problems and government programs for rural development. It reports to Parliament through the Minister of Regional Economic Expansion.

Canadian Dairy Commission. This Commission, which reports to Parliament through the Minister of Agriculture, was established on December 2, 1966 (RSC 1970, c.C-7) to provide efficient producers of milk and cream with the opportunity of obtaining a fair return for their labour and investment and thus ensure that consumers of dairy products would have a continuous and adequate supply of dairy products of high quality. The Commission consists of three members appointed by the Governor in Council and operates with the advice of a nine-member consultative committee appointed by the Minister.

Canadian Film Development Corporation. This Corporation, established by Act of Parliament in March 1967 (RSC 1970, c.C-8), fosters and promotes the development of a feature film industry in Canada through investment in productions, loans to producers, grants to film-makers and film technicians, awards for outstanding accomplishments, and advice and assistance in distribution and administrative matters. It works in co-operation with other federal departments and agencies and with provincial departments and agencies having like interests and finances its operations from a film development advance account in the Consolidated Revenue Fund. The Corporation consists of the Government Film Commissioner and six other members appointed by the Governor in Council for terms of five years. The Corporation reports to Parliament through the Secretary of State.

Canadian Government Specifications Board. Created in 1934 under the authority of the National Research Council Act (RSC 1970, c.N-14) as the Canadian "Government Purchasing Standards Committee", this interdepartmental agency's name was changed in 1948 to the Canadian Government Specifications Board (CGSB).

In 1965, responsibility for the CGSB's operation was transferred by Order in Council to the Department of Defence Production, now part of the Department of Supply and Services. Membership of the Board was then revised to include the Secretary of the Treasury Board, the President of the National Research Council, and the Deputy Ministers of Consumer and Corporate Affairs, National Defence, Public Works, Supply and Services, Transport, and Industry, Trade and Commerce. The Deputy Minister of Supply was designated Chairman of the Board.

The role of the CGSB has expanded to provide standards in support of government programs in procurement, consumer requirements, legislation, technical practices, test procedures and international standardization in more than a hundred fields, many of which are of national interest. It has compiled more than 1,600 standards which are available in both official languages. The technical process of developing and revising standards is performed by some 300 committees and more than 3,000 competent members representing the interests of government, industry, research and testing agencies, and users. The Board works closely with the Standards Council of Canada.

Canadian Grain Commission. The Canada Grain Act (SC 1970-71, c.7) came into force on April 1, 1971, repealing the Canada Grain Act, 1930 (RSC 1952, c.25) and replacing the former Board of Grain Commissioners for Canada. The new Commission reports to Parliament through the Minister of Agriculture, as did the Board, and the responsibilities are unchanged. The Commission provides general supervision over the physical handling of grain in Canada by licensing elevators and elevator operators, by inspecting, grading and weighing grain received at and shipped from terminal elevators, and by other services associated with regulating the grain industry. It manages and operates the six Canadian government elevators in western Canada.

The Commission consists of a chief commissioner and two commissioners. Its objects are, in the interests of grain producers, to establish and maintain standards of quality for Canadian grain, to ensure a dependable commodity for domestic and export markets and to regulate grain handling in Canada. It has authority to conduct investigations and hold hearings on matters coming within its purview, and to undertake, sponsor and promote research in relation to grain and grain products.

The Commission is part of the Canada Department of Agriculture, but submits a separate report to the Minister.

Canadian International Development Agency. The operation and administration of Canada's programs of international development are the responsibility of the Canadian International Development Agency. Originally established by Order in Council PC 1960-1476 and known until 1968 as the External Aid Office, the Agency is under the direction of a president and a governing board (Canadian International Development Board) and reports to Parliament through the Secretary of State for External Affairs.

Canadian International Development Board. This Board is the governing council responsible for directing operations of the Canadian International Development Agency.

Canadian Livestock Feed Board. This corporation, which reports to Parliament through the Minister of Agriculture, was established pursuant to the Livestock Feed Assistance Act (RSC 1970, c.L-9). The objects of the corporation are to ensure that sufficient feed grain and storage for feed grain are available to meet the needs of livestock feeders and to ensure reasonable stability and fair equalization of feed grain prices in eastern Canada and in British Columbia. Its powers include authority to make payments related to the cost of feed grain storage and transportation costs to attain its objectives. It may also buy, transport, store and sell feed grains in eastern Canada and British Columbia when authorized by the Governor in Council.

The Board has four members and operates with the assistance of a seven-member advisory committee; members of both the Board and the committee are appointed by the Governor in Council.

Canadian National Railways. The Canadian National Railway Company was incorporated to operate and manage a national system of railways, including the Canadian Northern Railway System, the Canadian Government Railways and all lines entrusted to it by Order in Council. Its operations are now governed by RSC 1970, c.C-10. In 1923 the Grand Trunk Railway Company of Canada was amalgamated with the Canadian National Railway Company and since 1923 a number of railway lines acquired by the government have been entrusted to the Company for operation and management, including the Newfoundland Railway and steamship services in 1949, the Témiscouata Railway in 1950, and the Hudson Bay Railway and the Northwest Communication System in 1958. The Canadian National Railways Act, 1919 was repealed in 1955 and the Canadian National Railways Act (SC 1955, c.29) substituted therefor.

The Canadian National Railway Company is controlled by a chairman and board of directors appointed by the Governor in Council, who report to Parliament through the Minister of Transport.

Canadian National Railways Securities Trust. This corporation was created by Section 12 of the Canadian National Railways Capital Revision Act 1937 for the purpose of acquiring and perpetuating the government claims and collateral against the Canadian Northern, the Grand Trunk, the Grand Trunk Pacific and Canadian National Railway companies for loans and accrued interest thereon.

Originally the capital stock was held by the Minister of Finance on behalf of the Crown, and the government transferred its claim to the Trust so that the railways remained obligated to the Trust in the same way and to the same extent they had previously been obligated to the government. Under the Canadian National Railways Capital Revision Act (RSC 1952, c.41) the capital stock was transferred to the Canadian National Railway Company in exchange for shares in that company. The indebtedness of the debtor corporations, however, remained unchanged and the restrictions as to the release of the securities remained under the control of the Governor in Council.

The chairman and directors of the Canadian National Railways are the trustees of the Canadian National Railways Securities Trust which reports to Parliament through the Minister of Transport.

Canadian National (West Indies) Steamships Limited. This agency corporation no longer owns or operates vessels but still reports assets through the Minister of Transport.

Canadian Overseas Telecommunication Corporation (COTC). Created in 1950 by Act of Parliament (RSC 1970, c.C-11), this Crown corporation operates all overseas communications to and from Canada — whether by radio, undersea cable or international satellite. By means of international-gateway switching-centres in Montreal and Vancouver, COTC provides public telephone service to cover 200 overseas territories. The Corporation also provides public message telegraph service, Telex and private wire service to many overseas points. COTC is the designated operating entity for Canadian participation in Intelsat. It reports to Parliament through the Minister of Communications.

Canadian Patents and Development Limited (CPDL). This Crown corporation was set up in 1947 under an amendment to the National Research Council Act passed in 1946. The purpose of the company, which is a subsidiary of the National Research Council, is to patent and license new products and processes that come out of NRC research, research of other government departments and agencies, and research of Canadian universities. Proposals for patents are assessed with regard to originality, existence of similar patented products or processes, commercial appeal, humanitarian or scientific value, and cost of developing, promoting and marketing. CPDL initiates and finances the development of many inventions to a stage where it is economically possible for private industry to carry them through to production and sale, thus bridging the gap between research and industry. Profits from inventions are used to sponsor less profitable but often more beneficial inventions, such as highly specialized surgical or scientific instruments.

The company, whose head office is located in Ottawa, reports to Parliament through a designated Minister, at present the President of the Treasury Board.

Canadian Penitentiary Service. The Penitentiary Service operates under the Penitentiary Act (RSC 1970, c.P-6) and is under the jurisdiction of the Solicitor General of Canada. It is responsible for all federal penitentiaries and for the care and training of persons sentenced or committed to those institutions. The Commissioner of Penitentiaries, under the direction of the Solicitor General, has control and management of the Service and all matters connected therewith.

Canadian Pension Commission. This Commission, established in 1933 by amendments to the Pension Act (RSC 1970, c.P-7), replaced the Board of Pension Commissioners, the first organization created to deal solely with war pensions for service in Canada's Armed Forces. The Commission's main function is the administration of the Pension Act under which it adjudicates on all claims for pensions in respect of disability or death arising out of service in Canada's Armed Forces; and Parts I to X and Part XII of the Civilian War Pensions and Allowances Act, which provide for the payment of pensions in respect of death or disability arising out of civilian service directly related to the prosecution of World War II. It also adjudicates on claims for pension under various other measures, authorizes and pays monetary grants accompanying certain gallantry awards bestowed on members of the Armed Forces, and administers various trust funds established by private individuals for the benefit of veterans and their dependants. The Commission consists of eight to 14 commissioners and up to ten ad hoc commissioners appointed by the Governor in Council. Its chairman has the rank of a Deputy Minister and it reports to Parliament through the Minister of Veterans Affairs.

Canadian Permanent Committee on Geographical Names. This Committee deals with all questions of geographical nomenclature affecting Canada and undertakes research and investigation into the origin and usage of geographical names. Its membership includes representatives of federal mapping agencies and other federal offices concerned with nomenclature and a representative appointed by each province. The Committee is administered by the Department of Energy, Mines and Resources.

Canadian Radio-Television Commission (CRTC). This Commission, established under the provisions of the Broadcasting Act, 1967-68 (RSC 1970, c.B-11), regulates and supervises all aspects of the Canadian broadcasting system. The executive committee, after consultation with the part-time members in attendance at a Commission meeting, may issue broadcasting licences or renewal licences for such terms, not exceeding five years and subject to such conditions related to the circumstances of the licensee as the executive committee deems appropriate for the implementation of the broadcasting policy enunciated in Section 2 of the Broadcasting Act. Under the same circumstances, the executive committee may, on application by a licensee, amend any conditions of a broadcasting licence already issued. The Commission usually holds public hearings in connection with issuing, suspending, etc. licences.

The CRTC consists of five full-time members and ten part-time members chosen regionally and appointed by the Governor in Council. It reports to Parliament through the Minister of Communications.

Canadian Saltfish Corporation. The Canadian Saltfish Corporation was established under the Saltfish Act (SC 1969-70, c.32) and became operative on May 4, 1970. Its main purpose is to improve the earnings of fishermen and of other primary producers of salt-cured fish, through the production or purchase, processing and marketing of salt cod from participating provinces.

The Corporation, whose head office is at St. John's, Nfld., consists of a board of directors composed of a chairman, whose office is in Ottawa, a president who is general manager, one director for each participating province and not more than five other directors, all of whom are appointed by the Governor in Council. It is assisted by an advisory committee of 15 members, also appointed by the Governor in Council, at least half of whom are fishermen or representatives of fishermen. The limit of the Corporation's financial obligations is \$10 million and the Corporation is required to operate without grant appropriation from Parliament. It is empowered to distribute excess of income over expenses to participating fishermen and other primary producers. The Corporation reports to Parliament through a designated Minister, at present the Minister of the Environment.

Canadian Transport Commission. The Canadian Transport Commission, a court of record created in 1967 by the National Transportation Act (RSC 1970, c.N-17), took over powers formerly vested in the Board of Transport Commissioners, the Air Transport Board and the Canadian Maritime Commission, giving it regulatory and judicial functions with respect to almost all aspects of railway, commercial air and merchant marine services. The Act also provides for the regulation of extra-provincial motor vehicle transport and commodity (solids) pipelines but the applicable parts of the Act were not yet in effect as at December 1972. In addition, the Commission is responsible for undertaking studies and research into the economic aspects of all modes of transport within, into or from Canada.

Six committees perform the Commission's regulatory duties under the Act: the Railway Transport Committee; the Air Transport Committee; the Water Transport Committee; the Telecommunication Committee; the Motor Vehicle Transport Committee; and the Commodity Pipeline Transport Committee.

The Commission consists of not more than 17 members, of whom one is president and two are vice-presidents, appointed by the Governor in Council for a maximum of ten years; it reports to Parliament through the Minister of Transport.

Canadian Wheat Board. The Board was incorporated in 1935 under the Canadian Wheat Board Act (RSC 1970, c.C-12) to market, in an orderly manner, in the interprovincial and export trade, grain grown in Canada. Its powers include authority to buy, take delivery of, store, transfer, sell, ship or otherwise dispose of grain. Except as directed by the Governor in Council, the Board was not originally authorized to buy grain other than wheat but, since August 1, 1949, it may also buy oats and barley if authorized to do so by Regulation approved by the Governor in Council. Only grain produced in the designated area, which includes Manitoba, Saskatchewan, Alberta and parts of British Columbia is purchased by the Board, which controls the delivery of grain into elevators and railway cars in that area as well as the interprovincial movement and export of wheat, oats and barley generally. The Board reports to Parliament through a designated Minister, at present the Minister of Justice.

Cape Breton Development Corporation. This Corporation was created by an Act of Parliament, assented to on July 7, 1967 (RSC 1970, c.C-13) and came into existence by proclamation on October 1, 1967, as a proprietary Crown corporation. The Corporation was established to rationalize the coal industry of Cape Breton Island and to broaden the base of the area's economy by assisting the financing and development of industry to provide employment outside the coal mines.

The Cape Breton Development Corporation acquired the former interests of the major coal producer in the Sydney coalfield and is operating three of those mines and developing one new mine. It is actively engaged in development of the tourist industry as well as primary products and various secondary industries.

The Act provides for a board of directors, comprising a chairman, a president and five other directors. Head office is located in Sydney, NS. The Corporation reports to Parliament through the Minister of Regional Economic Expansion. Its operations are financed by the Government of Canada.

Central Mortgage and Housing Corporation. This Corporation was incorporated by Act of Parliament (RSC 1952, c.46) in December 1945 to administer the National Housing Acts. Under the National Housing Act, 1954 (RSC 1970, c.C-16), the Corporation insures mortgage loans made by approved lenders for new and existing housing and makes direct loans in resource communities and rural areas; guarantees home improvement loans made by banks; undertakes subsidized rental housing projects and land assembly developments under federal-provincial arrangements; offers loans and subsidies for public housing projects; makes loans for land assembly projects to be used for general residential development; makes loans to individuals or organizations for low-rental housing projects; makes loans for student housing and to provinces and municipalities with provincial concurrence for sewage treatment projects designed to eliminate water and soil pollution; makes contributions and loans to provinces and municipalities for urban renewal operations; conducts housing research; encourages urban planning; and owns and manages rental housing units including those built for war workers and veterans. The Corporation arranges for and supervises construction of housing projects on behalf of the Department of National Defence and other government departments and agencies. It is responsible to Parliament through the Minister of State for Urban Affairs.

Columbia River Treaty Permanent Engineering Board. The Permanent Engineering Board, consisting of two Canadians and two Americans, was established under Article XV of the 1964 Columbia River Treaty between Canada and the United States. The Board assembles records, inspects and reports at least annually with respect to matters within the scope of the Treaty. It reports to Parliament through the Minister of Energy, Mines and Resources.

Commissioner of Official Languages. Appointed by Parliament pursuant to the Official Languages Act (RSC 1970, c.O-2), the Commissioner holds office for a term of seven years, renewable until age 65. He is responsible to Parliament for ensuring recognition of the equal status of French and English as Canada's official languages and for ensuring compliance with the spirit and intent of the Act in all the institutions of the Parliament and Government of Canada. To this end, the Commissioner is empowered to receive and investigate complaints from the public, and, on his own initiative, to conduct investigations into possible violations of the Act. The results of investigations must be communicated to the complainants and the institutions concerned and may, at the Commissioner's discretion, be the subject of a special report to Parliament. The Commissioner reports annually to Parliament on the conduct of his Office and may make recommendations for changes in the Act as he deems necessary or desirable.

Commonwealth War Graves Commission. The Commission operates under the Original Charter of Incorporation dated May 21, 1917 and the new Supplemental Charter dated June 8, 1964. Under these the Commission is entrusted with the marking and maintaining in perpetuity of the graves of those of the British Empire and Commonwealth Armed Forces who died during World Wars I and II. The Canadian High Commissioner in London, England is the official Commission member for Canada and the Minister of Veterans Affairs is the Agent of the Commission in Canada.

Company of Young Canadians. Established in 1966 as a Crown corporation (RSC 1970, c.C-26), the Company of Young Canadians is a collection of full-time volunteers between the ages of 18 and 28, who work with community groups on projects concerned with legal aid, welfare rights, day care, native rights,

the handicapped and education. The volunteers receive a living allowance from the CYC but are chosen directly by the community group seeking CYC support and are primarily responsible to this reference group. The CYC also employs field staff in the Northwest Territories and in each province, except Prince Edward Island, where they assist community groups in developing projects and placing volunteers.

Both the CYC's administrative nine-member council and executive director who is responsible for supervision and management are appointed by the Governor in Council. The Company reports to Parliament through the Secretary of State.

Copyright Appeal Board. The Board was established to provide an agency to which people using copyrighted music could direct appeals against the fees proposed by Performing Rights Societies for the use of the music. The Copyright Act (RSC 1970, c.C-30) empowers the Board to deal only with the amount of the fees that the Societies propose to collect for an ensuing calendar year. It has no authority to draft the tariffs or terms and conditions of the tariffs. Hearings before the Board are conducted in a quasi-judicial manner. After considering an appeal the Board makes such alterations to the proposed statements of fees as it thinks appropriate and transmits the statements thus altered or revised or unchanged to the Minister of Consumer and Corporate Affairs. The decision of the Board is final and binding.

The Copyright Appeal Board consists of three members appointed by the Governor in Council, one of whom, as chairman, must hold or have held high judicial office.

Court Martial Appeal Court. This Court was established as a superior court of record pursuant to s.201 of the National Defence Act (RSC 1970, c.N-4). Accused persons found guilty by a court martial have the right to direct an appeal to the Court Martial Appeal Court in respect of the legality of any or all of the findings, or the legality of the whole or any part of the sentence. The Appeal Court is composed of not fewer than four judges of the Federal Court of Canada, designated by the Governor in Council and such additional judges of a superior court of criminal jurisdiction as are appointed by the Governor in Council. One judge has been designated by the Governor in Council as the President. Appeals are heard by a minimum of three judges. The Court Martial Appeal Court may sit and hear appeals at any place under direction of the President. An appellant whose appeal has been wholly or partially dismissed by the Court Martial Appeal Court may, under certain circumstances, appeal to the Supreme Court of Canada; where the Court Martial Appeal Court has wholly or partially allowed an appeal, the Minister of National Defence may similarly enter an appeal to the Supreme Court of Canada.

Crown Assets Disposal Corporation. This Corporation was established in 1944 as the War Assets Corporation under the Surplus Crown Assets Act (RSC 1970, c.S-20) and is subject to the Financial Administration Act (RSC 1970, c.F-10). Its name was changed to Crown Assets Disposal Corporation in 1949. The Corporation is responsible for the sale of federal government surplus real estate and commodities located in Canada and at Canadian government establishments throughout the world. It also acts as agent on behalf of foreign governments in selling their surplus assets located in Canada and has reciprocal agreements with a number of European countries for marketing Canadian surplus assets located in their respective countries. Regional offices are maintained in Halifax, Montreal, Toronto, Edmonton and Vancouver. The Corporation is responsible to Parliament through the Minister of Supply and Services.

Defence Construction (1951) Limited. This is the Crown agency that procures for the Department of National Defence the construction and repair of buildings, structures and engineering works and professional engineering and architectural services. It reports to the Minister of National Defence.

The forerunner of the present company, Defence Construction Limited, began operation in November 1950 as a Crown agency responsible for awarding and supervising defence construction projects. Defence Construction (1951) Limited, incorporated July 12, 1951, under authority of the Defence Production Act, took over the responsibilities of the former agency.

The company's responsibilities in contracting for all new construction and repair and renovation projects (except contracts under \$10,000 which are arranged for the Department of National Defence via the Department of Supply and Services) include: participation in preparation of design; calling and reviewing of tenders; award and administration of contracts; supervision of construction work; and certification of progress claims for work completed. Activities cover four distinct spheres: defence projects in Canada for the Department of National Defence; all defence projects in Europe for the Department of National Defence under the North Atlantic Treaty Organization Agreement; defence construction for the United States government in Canada; and, by arrangement, acting as the contract agents or technical advisers on the rendering of assistance to other federal departments and agencies.

The head office of the agency is located at Ottawa and branch offices are maintained at Halifax, Montreal, Toronto, Winnipeg and Vancouver in Canada and in Lahr, Federal Republic of Germany.

Defence Research Board. The Defence Research Board, established in 1947 by an amendment to the National Defence Act (RSC 1970, c.N-4), is concerned with providing scientific advice to the Minister of National Defence, meeting the research requirements of the Canadian Armed Forces, and supporting research of defence interest in Canadian universities and applied research in those industries that require a defence science and technology input. The Board consists of a full-time chairman, a vice-chairman, and a

varying number of members appointed by the Governor in Council for three-year terms. The Deputy Minister of National Defence, the President of the National Research Council and three senior officers of the Canadian Armed Forces are ex-officio members. The Board has its headquarters in Ottawa, research establishments in Nova Scotia, Quebec, Ontario, Alberta and British Columbia and liaison offices in Washington, London and Paris.

Department of Agriculture. This Department was established in 1867 (SC 1868, c.53) and now operates under authority of RSC 1970, c.A-10. It undertakes work on all phases of agriculture. Research and experimentation are carried out by the Research, Health of Animals and Economics branches, and the Grain Research Laboratory; and the maintenance of standards and protection of products, by the Production and Marketing and Health of Animals branches. A new Food Systems Branch was created in 1972. The Canada Grain Act, as it pertains to the inspection, weighing, storage and transportation of grain, is administered by the Canadian Grain Commission; and programs concerning farm income security and price stability are provided under the Crop Insurance Act, the Prairie Farm Assistance Act, the Canadian Dairy Commission Act, the Agricultural Stabilization Act and the Agricultural Products Board. The Farm Credit Corporation, the Canadian Dairy Commission, the Canadian Livestock Feed Board and the National Farm Products Marketing Council report to Parliament through the Minister of Agriculture.

The Agricultural Stabilization Board, a departmental corporation under the Financial Administration Act, the Agricultural Products Board and the Canadian Grain Commission are parts of the Department.

Department of Communications. The Department was established under Part II of the 1969 Government Organization Act and operates under authority of RSC 1970, c.C-24. The Minister of Communications is responsible for fostering the orderly development and growth of communications for Canada. In the domestic field, this includes the extension of existing telecommunications systems and services to obtain optimum benefits in the short and long terms; the development and introduction of new communications systems, facilities and resources; the management of the radio frequency spectrum to permit the development and growth of radio communications; and the development of telecommunications services for the Government of Canada. In the international field, the Department acts to protect and support Canadian interests in international telecommunications systems, services and undertakings. The Minister of Communications reports to Parliament for the Canadian Overseas Telecommunication Corporation and the Canadian Radio-Television Commission.

Department of Consumer and Corporate Affairs. This Department was established in 1967 (RSC 1970, c.C-27) replacing the Department of the Registrar General of Canada. The duties, powers and functions of the Minister extend to and include all matters over which the Parliament of Canada has jurisdiction, not by law assigned to any other department, branch or agency of the Government of Canada, relating to: consumer affairs; corporations and corporate securities; combines, mergers, monopolies and restraint of trade; bankruptcies and insolvencies; and patents, copyrights and trade marks.

The functions of the Department are divided into five main areas. The Bureau of Consumer Affairs co-ordinates government activities in the field of consumer affairs; the Bureau of Corporate Affairs administers the government's corporate activities; the Bureau of Intellectual Property administers laws and regulations pertaining to patents, trade marks, industrial designs and copyrights; and the Bureau of Field Operations supervises the Department's operations across Canada, staffing regional offices in five Canadian cities from coast to coast and district offices in 22 others. Competition policy is regulated by the Director of Investigation and Research under the Combines Investigation Act.

In addition, as Registrar General of Canada, the Minister of Consumer and Corporate Affairs is the custodian of the Great Seal of Canada, the Privy Seal of the Governor General, the Seal of the Administrator of Canada and the Seal of the Registrar General of Canada.

The Restrictive Trade Practices Commission (Combines Investigation Act) is domiciled in the Department and reports directly to the Minister.

Department of Energy, Mines and Resources. The Department of Energy, Mines and Resources was created in 1966 by the Government Organization Act (RSC 1970, c.E-6). The Department, in addition to its administrative services, is organized into three groups: the Science and Technology Group includes the Geological Survey of Canada, the Mines Branch, the Surveys and Mapping Branch, the Earth Physics Branch, the Canada Centre for Remote Sensing, and the Polar Continental Shelf Project, all of which are engaged in research and the provision of information in their respective fields; the Mineral Development Group includes the Quebec regional office, the Mineral Resources Branch, which gathers economic data on all minerals for use by government, industry and the public and conducts administrative functions of resource management, and the Explosives Division which controls, under the provisions of the Explosives Act, the production and handling of explosives; the Energy Development Group has broad responsibilities relating to the development of plans and policies for all forms of energy, the development of programs, legislation and agreements to implement those policies, the direction of studies relating to energy sources and requirements, and the co-ordination of policy advice. The Assistant Deputy Minister (Energy) serves as adviser on over-all plans and policies relating to energy sources and requirements.

Atomic Energy of Canada Limited, Eldorado Nuclear Limited, Eldorado Aviation Limited, the Atomic Energy Control Board, the National Energy Board, and the Interprovincial Boundary Commissions report to Parliament through the Minister of Energy, Mines and Resources.

Operationally the International Boundary Commission reports through the Minister of Energy, Mines and Resources; in dealing with its counterpart in the United States, it is responsible to the Secretary of State for External Affairs.

Department of the Environment. Established by Act of Parliament in June 1971 (SC 1970-71, c.42), this Department carries the main federal responsibility for leading the attack on all forms of pollution and ensuring the proper management and development of Canada's natural resources.

Elements within the federal government previously involved in work related to the environment and renewable resources have been integrated into the Department which has two principal components: Fisheries and Marine Service, and Environmental Services. Each is headed by a Senior Assistant Deputy Minister. Fisheries and Marine Service is responsible for fisheries research, fisheries development and fishing operations on both coasts and in inland waters, ocean-oriented activities which include oceanography and hydrography, as well as the administration of small craft harbours. Environmental Services comprise: Atmospheric Environment Service; Environmental Management Service (including Canadian Forestry Service, Inland Waters Branch, Canadian Wildlife Service, and Lands Directorate); Environmental Protection Service; and Planning and Finance Service.

An Environmental Advisory Council, made up of representatives from industry, the universities and the scientific community, reviews departmental programs and provides advice to the Minister on matters related to environmental protection and resource development. A Forestry Advisory Council and a Fisheries Advisory Council have been established to cover major renewable resources.

The Minister of the Environment, who also carries the title of Minister of Fisheries, reports to Parliament on behalf of the Fisheries Prices Support Board, the Freshwater Fish Marketing Corporation, the Canadian Saltfish Corporation and the Eastern Rockies Forest Conservation Board.

Department of External Affairs. The main function of the Department of External Affairs, established in 1909 (RSC 1970, c.E-20), is the protection and advancement of Canadian interests abroad. The Minister responsible for the Department is the Secretary of State for External Affairs. The senior permanent officer (Deputy Minister) of the Department, the Under-Secretary of State for External Affairs, is assisted by an Associate Under-Secretary and by five Assistant Under-Secretaries and is advised by officers in charge of bureaus, offices and divisions. The directors-general or directors of these units are each responsible for a part of the Department's work and are assisted by foreign service officers, administrative services officers and specialists in various occupational groups, as well as by an administrative staff. Officers serving abroad are formally designated as High Commissioners, Ambassadors, Ministers, Counsellors, First Secretaries, Second Secretaries, Third Secretaries and Attachés at diplomatic posts and Consuls General, Consuls and Vice-Consuls at consular posts. Canada maintains approximately 171 diplomatic, consular and other missions, 58 of which are non-resident.

In Ottawa the work of the Department is conducted by four regional, seven functional and three administrative bureaus, in addition to a number of operational units performing staff or special functions. The four regional bureaus administer 12 geographical divisions, each of which is responsible for the countries that make up the region administered by the bureau to which it belongs: the European Affairs Bureau includes three divisions — Western Europe, Eastern Europe and Northwestern Europe including Britain; the Bureau of Asian and Pacific Affairs includes the East Asia, Pacific and South Asia divisions; the Bureau of African and Middle Eastern Affairs, the African Affairs I, African Affairs II and Middle Eastern divisions; and the Bureau of Western Hemisphere Affairs, the Caribbean (Commonwealth), Latin American and United States of America divisions. The seven functional bureaus include 20 divisions: the Bureau of Economic and Scientific Affairs comprises the Aid and Development, Commercial Policy, Scientific Relations and Environmental Problems, and Transport, Communications and Energy divisions; the Bureau of Legal Affairs includes the Legal Advisory and Legal Operations divisions; the Bureau of Consular Affairs, the Consular Operations, and Consular Policy and Research divisions; the Bureau of Defence and Arms Control Affairs, the Arms Control and Disarmament, and Defence Relations divisions; the Bureau of Public Affairs, the Academic Relations Service, Cultural Affairs, Historical, Information and World Exhibitions Program divisions; the Bureau of Coordination, the Commonwealth Institutions, Federal-Provincial Coordination and Francophone Institutions divisions; and the Bureau of United Nations Affairs, the United Nations Economic and Social Affairs and United Nations Political and Institutional Affairs divisions. The four administrative bureaus are responsible respectively for Personnel, Finance and Administration, Communications and General Services, and Security and Intelligence Liaison. In addition, there is an Inspection Service, a Policy Analysis Group, an Operations Centre, a Central Staff, an Interdepartmental Committee on External Relations, and a Special Adviser on Foreign Service appointments and related policies.

The International Joint Commission reports to the Secretary of State for External Affairs of Canada as well as to the Secretary of State of the United States. The Secretary of State for External Affairs reports to Parliament for the Canadian International Development Agency.

Department of Finance. Created by Act of Parliament in 1869, this Department now operates under the Financial Administration Act (RSC 1970, c.F-10 as amended by SC 1970-71, cc.42,55). It is primarily responsible for advice to the government on the economic and financial affairs of Canada. The work of the Department is carried out in six branches. The Tax Policy Branch helps form tax policy and maintain the tax structure in good order so that revenues required by the government will be raised in the best possible way. Its work is carried out in the Personal, Commodity and Estates Tax Division, the Corporation and Business Income Division and the International Tax Section. The Federal-Provincial Relations and Economic Programs Branch comprises the Economic Development, Resource Program, Federal-Provincial Relations, and Social Development and Manpower Policy divisions and the Municipal Grants section. The Tariff, Trade and Aid Branch has the following divisions: Tariffs, International Economic Relations and International Programs. The Economic Analysis, Fiscal Policy and International Finance Branch includes the Economic Analysis Division, Fiscal Policy Division, Fiscal Analysis and Forecasting Division and the International Finance Division. The Financial Operations Branch has the Capital Markets Division and Government Finance, Loans, Investments and Guarantees Division. The Long-Range Economic Planning Branch is responsible for co-ordinating, planning and developing medium- and long- term economic measures and policies. The Inspector General of Banks is an office of the Department. In addition, the following agencies report to Parliament through the Minister of Finance: the Anti-dumping Tribunal, the Bank of Canada, the Canada Deposit Insurance Corporation, the Industrial Development Bank, the Department of Insurance and the Tariff Board. The Minister of Finance acts as spokesman in Parliament for the Auditor General.

Department of Indian Affairs and Northern Development. The Department of Indian Affairs and Northern Development was established in June 1966, superseding the Department of Northern Affairs and National Resources; it now operates under authority of RSC 1970, c.I-7. In 1968, the Department was reorganized, creating, in addition to departmental support services and a Technical Services Branch, three distinct program areas: the Indian and Eskimo Affairs Program includes education, community affairs, economic development for Indians and Eskimos and Indian trust administration; the Northern Development Program covers major resource development in the Canadian North, management of territorial resources along with economic research and advice; and the Conservation Program, including National Parks and Historic Sites and Parks.

The Commissioner of the Northwest Territories and the Commissioner of the Yukon Territory report to Parliament through the Minister of Indian Affairs and Northern Development. The Minister is also responsible to Parliament for the Northern Canada Power Commission, the National Battlefields Commission and the Historic Sites and Monuments Board of Canada. The Northern Scientific Adviser's Office acts in an advisory capacity to the Minister.

Department of Industry, Trade and Commerce. In 1969, the Departments of Industry and of Trade and Commerce were merged to form the Department of Industry, Trade and Commerce (ITC), which operates under authority of RSC 1970, c.I-11. ITC promotes the establishment, growth and efficiency of manufacturing, processing and tourist industries in Canada and fosters the development of Canadian trade. The Department plans and carries out programs to assist manufacturing and processing industries in adapting to new technology and changing market conditions, in developing unrealized potential and in rationalizing productive facilities and corporate structures. It promotes product and process development, increased productivity, greater use of research, modern equipment, improved industrial design, the application of advanced technology and modern management techniques, and the development and application of sound industrial standards in Canada and in world trade.

In addition, the Department's functions include: improving access of Canadian goods and services into external markets through trade negotiations; contributing to the improvement of world trading conditions; providing support services for industrial and trade development, including information, import analysis and traffic services; analyzing the implications for Canadian industry, trade and commerce and for tourism of government policies related thereto in order to contribute to the formulation and review of those policies; and compiling and updating detailed information on trends and developments in Canada and abroad related to the manufacturing and processing and tourist industries.

The Department is organized into six major functional groups: Office of Tourism, Industry Development, Industrial Policies, Export Development, International Trade Relations and Administration. The Office of Tourism includes the Travel Industry Branch and the Canadian Government Travel Bureau. The Industry Development component is made up of nine Industry Development Branches which cover the major industry groupings in Canada: Aerospace, Marine and Rail; Agriculture, Fisheries and Food Products; Apparel and Textiles; Chemicals; Electrical and Electronics; Machinery; Materials; Mechanical Transport and Wood Products. The Industrial Policies segment includes the Office of Science and Technology, the Office of the Industrial Policy Adviser and the Office of Design. The Export Development section comprises Export Projects, Financing and Aid, Grains, Transportation and Trade Services, and Fairs and Missions. Reporting to the International Trade Relations sector is the Office of General Relations, the Office of Special Import Policy and the Office of Export/Import Permits. Administration is responsible for the areas of Finance, Personnel, Information Services and Program

Analysis. In addition, the Department operates eight regional offices located across Canada and the Trade Commissioner Service which has 82 trade offices in 57 countries.

The Minister also reports to Parliament on behalf of Statistics Canada and the Export Development Corporation. Boards and other organizations reporting to the Minister are the General Adjustment Assistance Board, the Machinery and Equipment Advisory Board, the Pharmaceutical Industry Development Advisory Committee, the National Design Council, the Standards Council of Canada, the Textile and Clothing Board, the Preparatory Commission for Metric Conversion and the Minister's Advisory Council.

Department of Insurance. The Minister of Finance is responsible for the Department of Insurance which originated in 1875 as a branch of the Department of Finance but was constituted a separate Department in 1910. It is authorized and governed by the Department of Insurance Act (RSC 1970, c.I-17). Under the Superintendent of Insurance, who is the Deputy Head, the Department administers the statutes of Canada applicable to federally incorporated insurance, trust, loan and investment companies; provincially incorporated insurance companies registered with the Department; British and foreign insurance companies operating in Canada; small loans companies and money-lenders; co-operative credit societies registered under the Co-operative Credit Associations Act; pension plans organized and administered for the benefit of persons employed in connection with certain federal works, undertakings and businesses; and life insurance issued to certain members of the Public Service prior to May 1954.

Under the relevant provincial statutes, the Department examines trust and loan companies incorporated in Nova Scotia, trust companies incorporated in New Brunswick and insurance and trust companies incorporated in Manitoba. It reports to Parliament through the Minister of Finance.

Department of Justice. This Department, established by SC 1868, c.39, now operates under authority of the Department of Justice Act (RSC 1970, c.J-2). The Minister of Justice is the official legal adviser of the Governor General and the legal member of the Queen's Privy Council for Canada. It is his duty to see that the administration of public affairs is in accordance with law, to superintend all matters connected with the administration of justice in Canada that are not within the jurisdiction of the provincial governments, to advise upon the legislation and proceedings of the provincial legislatures, and generally to advise the Crown on all matters of law referred to him by the Crown. The Minister of Justice is, ex officio, Her Majesty's Attorney General of Canada. In this capacity it is his duty to advise the heads of the departments of the Government of Canada on all matters of law connected with such departments, to settle and approve all instruments issued under the Great Seal of Canada, and to regulate and conduct all litigation for or against the Crown in the right of Canada.

The Minister of Justice reports to Parliament for the Tax Review Board, the Law Reform Commission of Canada, and at present, is the designated Minister responsible for the Canadian Wheat Board.

Department of Labour. The Department of Labour was established in 1900 by Act of Parliament (SC 1900, c.24) and now operates under the authority of the Department of Labour Act (RSC 1970, c.L-2). The Department administers, under the Minister of Labour, legislation dealing with: fair employment practices; hours of work, minimum wages, annual vacations, holidays with pay, equal wages, group and individual terminations of employment, severance pay and the regulation of fair wages and hours of labour in contracts made with the Government of Canada for construction, remodelling, repair or demolition of any work; government employee compensation, merchant seamen compensation, and employment safety; and transitional assistance benefits for auto workers and adjustment assistance benefits for textile workers. It promotes joint consultation with industries through labour management committees and operates a women's bureau. The Department publishes the *Labour Gazette* and other publications as well as general information on labour management, employment, manpower and related subjects.

The Merchant Seamen Compensation Board reports to the Minister of Labour. The Department is the official liaison agency between the Canadian government and the International Labour Organization. The Canada Labour Relations Board and Information Canada report to Parliament through the Minister of Labour.

Department of Manpower and Immigration. The Department of Manpower and Immigration, created under the provisions of the Government Organization Act 1966 and operating now under RSC 1970, c.M-1, has responsibility for the development and utilization of manpower resources in Canada, employment services and immigration. The Department is composed of three operational arms: Operations Canada; the Manpower and Immigration Divisions; and two support service divisions – Program Development and Administration. Operations Canada directs the activities of some 390 Canada Manpower Centres and 95 Immigration Centres in Canada assisted and co-ordinated by five regional offices located in Halifax, Montreal, Toronto, Winnipeg and Vancouver. The Canada Manpower Division is responsible for counselling programs, manpower training and mobility programs, employer services and services for disadvantaged workers and students. The Canada Immigration Division administers the Immigration Act and Regulations and is responsible for the selection, examination, movement and admission of immigrants to Canada, and for the exclusion or deportation of undesirable persons. The Department maintains some 50 immigration offices abroad. The Department's support branches include the Program Development

Service, which supplies development and evaluation research and the Administration Division which provides financial and management services, and personnel and information services.

The Canada Manpower and Immigration Council, the Immigration Appeal Board and the Unemployment Insurance Commission report to Parliament through the Minister of Manpower and Immigration.

Department of National Defence. The Department of National Defence and the Canadian Forces operate under the National Defence Act (RSC 1970, c.N-4). The control and management of all matters relating to national defence, the Canadian Armed Forces and the Defence Research Board are the responsibility of the Minister of National Defence; duties and functions relating to civil emergency operations in peace and war are also assigned to the Department, with the Canadian Forces undertaking the role.

The Canadian Forces Reorganization Act of 1968 unified the Royal Canadian Navy, the Canadian Army and the Royal Canadian Air Force into a single service called the Canadian Armed Forces. The civilian administration of the Department is organized under the Deputy Minister, who maintains control over the financial aspects of operational policy, logistics, and personnel and administration. The Defence Research Board, created in 1947, conducts research relating to the defence of Canada and also undertakes the development of or improvements in materiel.

A Defence Council, consisting of the Minister of National Defence as Chairman, the Deputy Minister of National Defence, the Chief of the Defence Staff, the Chairman of the Defence Research Board and the Vice Chief of the Defence Staff, meets at regular intervals to consider and advise on major policy matters.

The Crown corporation, Defence Construction (1951) Limited, reports to Parliament through the Minister of National Defence. The Emergency Measures Organization (EMO) reports to the Minister of National Defence through the Deputy Minister.

Department of National Health and Welfare. This Department was established in October 1944 under the Department of National Health and Welfare Act (RSC 1970, c.N-9). An Administration Branch serves both the health and the welfare branches. At present the Deputy Minister of Health administers four branches: Health Programs, Health Protection, Medical Services and Long Range Health Planning; the Deputy Minister of Welfare administers six branches: Income Security, International and Emergency Welfare, Social Allowances and Services, Canada Pension Plan, Policy Research Planning and Evaluation, and Developmental Programs. The two Deputy Ministers are also involved in Canada's role in international health and welfare programs.

Departmental programs on health include hospital insurance and diagnostic services, medical care insurance, health resources, food and drug supervision, narcotics control, national health grants, federal emergency health services, environmental health, adverse drug reaction reporting, operation of a central clearing house for poison control centres, health, medical and hospital services to Indians and Eskimos across Canada and all residents of the Yukon Territory and Northwest Territories, government employee health services and leprosy control as well as assistance and consultation services to the provinces on request.

Welfare programs including the Canada Pension Plan, old age security and guaranteed income supplements, family and youth allowances, the Canada Assistance Plan and emergency welfare are largely of an income-support nature. In addition, the Department administers a fitness and amateur sport program, and a system of grants for professional training and research.

The National Council of Welfare reports directly to the Minister who also reports to Parliament for the Medical Research Council.

Department of National Revenue. From Confederation until May 1918, customs and inland revenue Acts were administered by separate departments; after that date they were amalgamated under one Minister as the Department of Customs and Inland Revenue. In 1921 the name was changed to the Department of Customs and Excise. In April 1924 collection of income taxes was placed under the Minister of Customs and Excise and, under the Department of National Revenue Act, 1927, the Department became known as the Department of National Revenue. It operates now under RSC 1970, c.N-15.

The Customs and Excise Division of the Department is responsible for the assessment and collection of customs and excise duties as well as of sales and excise taxes. The Taxation Division is responsible for the assessment and collection of income taxes, old age security tax, Part I of the Canada Pension Plan, and collection of premiums and administration of the coverage provisions of the Unemployment Insurance Act through its 28 district taxation offices and its Taxation Data Centre.

Department of Public Works. The Department was constituted in 1867 and operates under the legislative authority of the Public Works Act (RSC 1970, c.P-38). It is responsible for the management and direction of the public works of Canada and, except as specifically provided in other Acts, attends to the construction and maintenance of public buildings, wharves, piers, roads and bridges and the undertaking of dredging and protection work. Federal government interest in the Trans-Canada Highway and the Northwest Highway System is also handled by the Department. The Department has regional offices at Halifax, Montreal, Ottawa, Toronto, Edmonton and Vancouver; subsidiary offices at other key points across the country are also maintained. Departmental organization includes four major areas of operation: Design

and Construction; Realty; Planning and Systems; and Technological Research and Development, together with the Directorate of Customer and Public Relations, the Financial Adviser, the Personnel Adviser and the Dominion Fire Commissioner — all reporting to the Deputy Minister.

Department of Regional Economic Expansion. This Department was established in 1969 (RSC 1970, c.R-4). Its function is to ensure that economic growth is dispersed widely enough across Canada to bring employment and earning opportunities in the slow-growth regions as close as possible to those in the other parts of the country, without interfering with a high over-all rate of national growth. The legislation authorizes the Department, in co-operation with provincial governments and other federal agencies, to prepare development plans and programs designed to meet the special needs of particular areas.

The Department has six major divisions, each under the control of an Assistant Deputy Minister: Planning, Incentives, Co-ordination and Liaison, and the Eastern, Central and Western Regions. A major program provides development incentives to industry, in the form of cash grants, to encourage new productive employment in designated regions where such employment has been scarce. In 23 special areas, the Department is taking special action to encourage economic development and social adjustment. The Department is also responsible for programs under the Agricultural and Rural Development Act (ARDA); the Fund for Rural Economic Development (FRED); and the Prairie Farm Rehabilitation Act (PFRA) which is concerned with land-use adjustment, water development projects and the establishment of tree shelterbelts. An Atlantic Development Council advises the Minister on programs and policies for fostering economic development and social adjustment in the Atlantic region.

The Minister of Regional Economic Expansion reports to Parliament for the Cape Breton Development Corporation, the New Brunswick Multiplex Corporation and the Canadian Council on Rural Development.

Department of the Secretary of State. The duties, powers and functions of the Secretary of State of Canada (SC 1966-67, c.25) extend to and include all matters over which the Parliament of Canada has jurisdiction, not by law assigned to any other department, branch or agency of the Government of Canada, relating to: citizenship; elections; State ceremonial, the conduct of State correspondence and the custody of State records and documents; the encouragement of the literary, visual and performing arts, learning and cultural activities; and libraries, archives, historical resources, museums, galleries, theatres, films and broadcasting.

The responsibilities of the Department of the Secretary of State include those pertaining to the administration of the following branches: Citizenship; Citizenship Registration; Education Support; Bilingualism Development Programmes; Arts and Culture; State Protocol and Special Events; and Translation Bureau. A Minister of State is responsible for matters pertaining to multiculturalism.

The Secretary of State reports to Parliament for the Canadian Film Development Corporation, the National Arts Centre Corporation, the National Film Board, the National Library, the Public Archives, the National Museums of Canada, the Canada Council, the Canadian Broadcasting Corporation, the Company of Young Canadians and the Public Service Commission and acts as spokesman for the Office of the Representation Commissioner. In addition, the Secretary of State is responsible for the financial and administrative affairs of the Bilingual Districts Advisory Board.

Department of the Solicitor General. Before 1936, the Office of the Solicitor General was either a Cabinet post or a Ministerial post outside the Cabinet. From 1936 to 1945 the position did not exist, the duties of the Office being wholly absorbed by the Attorney General of Canada. The Solicitor General Act, 1945 re-established the Solicitor General as a Cabinet officer and provided that "the Solicitor General shall assist the Minister of Justice in the Counsel work of the Department of Justice, and shall be charged with such other duties as are at any time assigned to him by the Governor-in-Council". This legislation was repealed in 1966 when a new Department of the Solicitor General was created (RSC 1970, c.S-12); the Solicitor General of Canada became the Cabinet Minister with primary responsibility in the fields of correction and law enforcement. He is responsible for the Royal Canadian Mounted Police, the Canadian Penitentiary Service and also reports to Parliament for the National Parole Board, which is an independent agency.

Department of Supply and Services. The Department of Supply and Services was established on April 1, 1969 (RSC 1970, c.S-18) and incorporates certain services previously provided by other departments, in line with the recommendations of the Royal Commission on Government Organization (Glassco Commission) which had stressed the need for the federal government to foster efficiency and effect economies wherever possible. The Minister of Supply and Services is also the Receiver General for Canada and exercises all the duties, powers and functions assigned to that office by law.

The Department is organized into two major administrations, each headed by a Deputy Minister directly responsible to the Minister. The Supply Administration administers the Supply Programme, the objective of which is to acquire and provide, at minimum cost, goods and services required by federal government departments and agencies. It also maintains federal government equipment and provides printing facilities. The Supply Administration has 13 regional or district supply offices across Canada; at various locations within these areas it provides purchasing and warehousing services and other services

such as field contract administration, equipment maintenance, security, emergency supply planning, assets management and printing. The Overseas Region consists of two supply offices, one in London, England and the other in Koblenz, Federal Republic of Germany and one contract administration office in Washington, DC. The Supply Administration is organized into Commercial Supply Service, Science and Engineering Procurement Service and Corporate Management Service.

The Services Administration, acting for the Receiver General, provides payment or cheque-issuing services on behalf of all federal departments, maintains the fiscal accounts of Canada and prepares the public accounts. It offers departments and agencies a broad range of management and advisory services in management consulting, auditing and computer services fields. It also provides administrative services for all departments in connection with pay, pensions and other employee benefit plans, together with financial management reports and statistical information related to its cheque-issuing function. Service functions are carried out through approximately 40 regional and district offices throughout Canada and abroad.

The Minister of Supply and Services reports to Parliament for the Canadian Commercial Corporation, Canadian Arsenals Limited, Crown Assets Disposal Corporation and the Royal Canadian Mint.

Department of Veterans Affairs. This Department, established in 1944 (RSC 1970, c.V-1), is concerned exclusively with the welfare of veterans and with the dependants of veterans and of those who died during active service. The Department is empowered to provide treatment services (hospital, medical, dental and prosthetic), welfare services, education assistance, life insurance, and land settlement and home construction assistance. The Veterans' Bureau, which on March 31, 1971 (SC 1970-71, c.31) became the Bureau of Pensions Advocates, assists veterans in the preparation and presentation of pension claims. The same statute authorized the establishment of the Pension Review Board, an independent body that provides a new and improved adjudicating process of appeal for the veteran who is dissatisfied with a previous ruling of the Entitlement Board of the Canadian Pension Commission or a decision of two members of the Commission.

The Department has treatment institutions and facilities in eight major urban centres and three veterans homes across Canada and it maintains administrative offices in the large cities and in London, England. The offices in Canada are shared with the Canadian Pension Commission, the War Veterans Allowance Board and the Bureau of Pensions Advocates.

The Canadian Pension Commission, the War Veterans Allowance Board, the Bureau of Pensions Advocates, the Pension Review Board and the Army Benevolent Fund Board report to Parliament through the Minister of Veterans Affairs.

Director of Soldier Settlement and Director of the Veterans' Land Act. The Director of Soldier Settlement (SC 1919, c.71) is also the Director of the Veterans' Land Act (RSC 1970, c.V-4), and in each capacity is legally a corporation sole. For administrative purposes, however, the programs carried on under both Acts constitute integral parts of the services provided by the Department of Veterans Affairs.

Dominion Council of Health. Established under the Department of National Health and Welfare Act (RSC 1970, c.N-9), the Dominion Council of Health is an advisory body to the Minister of National Health and Welfare on matters relating to the health of Canadians. It assists in the co-ordination of federal-provincial health programs and in liaison with federal and provincial health authorities. The Council meets twice a year and consists of the Deputy Minister of National Health, who acts as chairman, the Deputy Minister of Health for each province and five members, appointed by Order in Council for three-year periods, who represent various segments of the Canadian population.

Dominion Fire Commissioner. The Commissioner is responsible for directing fire protection and fire prevention programs throughout all the civil departments of the federal government. His Office compiles civilian fire cause and loss statistics on a national basis; he presents the data in his annual report to the Minister of Public Works. The Office of the Dominion Fire Commissioner is part of the Department of Public Works.

Eastern Rockies Forest Conservation Board. The Board was appointed in 1947 under the Eastern Rocky Mountain Forest Conservation Act (SC 1947, c.59) which authorized an agreement between the federal government and Alberta relating to the protection and conservation of the forests on that portion of the eastern slope of the Rocky Mountains which gives rise to the major tributaries of the Saskatchewan River. Its function is to determine the policy necessary to obtain the greatest possible flow of water in the Saskatchewan River system. The planning of programs of forest use and conservation is a joint duty of the Board and the provincial Forest Service; the administration of the conservation area is a function of the province. In April 1962, a Technical Co-ordinating Committee for Watershed Research was established to undertake study of the related needs defined by the Board. The Committee's programs, undertaken by seven co-operating agencies of the federal and Alberta governments, are co-ordinated by an officer of the federal Department of the Environment.

Funds for capital expenditures during the first seven years of the agreement were provided by the federal government with maintenance expenditures being paid by Alberta. In 1955 the province undertook the responsibility of financing both capital improvements and maintenance work. Currently, one member of the three-man Board is appointed by the federal government and the province has the right to appoint

two members. The choice of one of the three members as Board chairman is vested in the province. The Board reports to Parliament through the Minister of the Environment.

This Board will complete its planned 25-year program and go out of existence March 31, 1973.

Economic Council of Canada. This corporation, established under legislation passed on August 2, 1963 (RSC 1970, c. E-1), consists of a full-time chairman, two full-time directors appointed for a term not to exceed seven years, and not more than 25 additional members to serve part-time and without remuneration. The Council is to be as representative as possible of labour, agriculture and primary industries, secondary industry and commerce, and the general public. Its functions are to advise and recommend measures that will achieve in Canada the highest possible levels of employment and efficient production so that the country may enjoy a high and consistent rate of economic growth and that all Canadians may share in rising living standards; to promote and expedite continuing improvement in productive efficiency in the various aspects of Canadian economic activity; and to publish an annual review of medium- and long-term economic prospects and problems. The Council reports to Parliament through the Prime Minister.

Eldorado Aviation Limited. This company was incorporated April 23, 1953 to carry air traffic, both passenger and freight, for Eldorado Nuclear Limited and its wholly owned subsidiary, Northern Transportation Company Limited. It reports to Parliament through the Minister of Energy, Mines and Resources.

Eldorado Nuclear Limited. Set up in 1944 (RSC 1952, c.53) under the name of Eldorado Mining and Refining (1944) Limited (the date was omitted in June 1952 and the name changed in 1968), the Crown company's business is the mining and refining of uranium and the production of nuclear fuels in Canada. The company also acts as a custodian for Her Majesty of concentrates purchased under stockpiling contracts. It reports to Parliament through the Minister of Energy, Mines and Resources.

Export Development Corporation. This Corporation operates under authority of the Export Development Act (RSC 1970, c.E-18 as amended by SC 1970-71, c.23). Its purpose is to facilitate the development of Canada's export trade by the provision of expanded insurance, guarantee, loan and other financial facilities which enable Canadian firms to meet international credit competition. It reports to Parliament through the Minister of Industry, Trade and Commerce. Its affairs are administered by a 12-man board of directors. The chairman and six other directors are appointed from among persons employed in the Public Service of Canada, the remaining five from private business. The Corporation's functions are: to insure Canadian exporters against non-payment by foreign buyers due to credit or political risks over which neither buyer nor seller has any control; to issue guarantees to persons in respect of the financing of exports; to make loans to foreign buyers or to issue guarantees in respect of the purchase of capital goods or major services from Canada involving extended credit terms; and to insure Canadian investments abroad against non-commercial risks such as war or revolution, expropriation or confiscation, or the inability to repatriate capital or earnings.

Farm Credit Corporation. This Corporation which was established on October 5, 1959 (RSC 1970, c.F-2) is a Crown corporation responsible to Parliament through the Minister of Agriculture. Under the Farm Credit Act it makes long-term mortgage loans to assist farmers in developing viable farm businesses. It also administers the Farm Syndicates Credit Act and acts as an agent of the Canada Department of Agriculture in administering the Land Transfer Plan of the Small Farm Development Program.

Fisheries Prices Support Board. The Board was set up under the Fisheries Prices Support Act of 1944 (RSC 1970, c.F-23) to recommend to the government price support measures when severe price declines occur. The Board functions under the direction of the Minister of Fisheries and consists of a chairman, who is a senior officer of the Department and five members chosen from private and co-operative firms in the industry. The Board has authority to buy fish products and to sell or otherwise dispose of them or to pay producers the difference between a price prescribed by the Board and the average price the product actually commands.

Fisheries Research Board of Canada. The Board is a research body operating under an Act of Parliament (RSC 1970, c.F-24) to advise the Minister of Fisheries on research and development programs within the Fisheries and Marine Service, Department of the Environment. The Board's 18 members are scientists from universities and provincial research councils and senior executives from Canada's fishing industry.

Foreign Claims Commission. By Order in Council PC 1970-2077 of December 8, 1970 the Canadian government established the Foreign Claims Commission to inquire into property claims made by Canadian citizens and the Government of Canada against foreign countries which may, from time to time, be referred to the Commission by the government. The reference is made after the government has negotiated a lump sum agreement with the foreign country. The Commissioners submit reports and recommendations regarding each claim to the Secretary of State for External Affairs and the Minister of Finance, stating whether, in the opinion of the Commissioners, each claimant is eligible to receive a payment under regulations promulgated from time to time by Order in Council. Up to March 31, 1973 claims against Hungary, Romania and Poland had been referred to the Commission.

Freshwater Fish Marketing Corporation. This Corporation was established under the Freshwater Fish Marketing Act (RSC 1970, c.F-13) which received Royal Assent on February 27, 1969, and was given the function of marketing and trading in fish, fish products and fish by-products in and out of Canada with the objectives of ensuring more orderly marketing for the benefit of the whole fishery and achieving higher and more stable prices for the catch. The Corporation received a grant for initial operating and establishment expenses but conducts its operations on a self-sustaining basis without parliamentary appropriations; it is financed by bank loans with government guarantee of repayment or by direct loans. The Corporation consists of a board of directors composed of a chairman, a president, one director for each participating province and four other directors appointed by the Governor in Council for a term not exceeding five years. The Corporation reports to Parliament through the Minister of the Environment.

General Adjustment Assistance Board. This Board administers the General Adjustment Assistance Program, established in 1968 (SC 1967-68, c.34) and revised in 1971. The Program helps manufacturers take advantage of export opportunities arising from the Kennedy Round; assists manufacturers of textiles, clothing goods or footwear to improve their competitive position in domestic or export markets; and aids those who have been injured, or threatened with injury, as a result of Kennedy Round reductions of Canadian tariffs. Financial assistance is also made available in the form of government insurance on loans, direct loans and grants to manufacturers for restructuring projects necessitated by tariff changes. The Board has members representing both private industry and government and reports to the Minister of Industry, Trade and Commerce.

Grains Group. In 1970, the Minister responsible for the Canadian Wheat Board (at present, the Minister of Justice) organized the Special Group on Grains, known as the Grains Group. The Group consists of representatives from the railways and the Canadian Transport Commission and components of the Canada Department of Agriculture and of the Department of Industry, Trade and Commerce. Its role is to co-ordinate, to review and to recommend federal policies for grains, grain production and handling.

Halifax Relief Commission. The Halifax Relief Commission was established (SC 1918, c.24) to carry on the work of the Halifax Relief Committee, formed by citizens following the explosion in Halifax on December 6, 1917. The Commission, in addition to conducting inquiries into the losses and damage which resulted from the explosion, is charged with the administration of relief funds. The Prime Minister is responsible for the Commission, but its financial arrangements are made through the Minister of Finance.

Heritage Canada. Established under Part II of the Canada Corporations Act (RSC 1970, c.C-32), Heritage Canada is a national trust. It will be concerned with the conservation of buildings, sites, natural and scenic areas of importance to the country's heritage. The interest from an initial federal capital endowment of \$12 million will be used to further its objectives. Heritage Canada will seek to enlist the support of the general public, foundations and corporations; membership will be open to anyone. It is responsible to Parliament through the Minister of Indian Affairs and Northern Development.

Historic Sites and Monuments Board of Canada. This Board was established in 1919 and now operates under authority of RSC 1970, c.H-6. It is an appointed body of 12 provincial and two federal officials which advises the Minister of Indian Affairs and Northern Development on matters of national historic importance with particular reference to commemoration or preservation.

Immigration Appeal Board. The Immigration Appeal Board was established in 1967 by the Immigration Appeal Board Act (RSC 1970, c.I-3). The Board is a court of record, with broad discretionary powers to permit the temporary or permanent admission of individuals, notwithstanding contrary provisions of the Immigration Act. The establishing Act provides for the operation of the Board and in particular for the legal and administrative processes involved in appeals by individuals against deportation, detention and the refusal of admission of sponsored relatives ordered under the provisions of the Immigration Act or Regulations. An appeal lies to the Federal Court of Canada and to the Supreme Court of Canada on leave.

The Board consists of nine members and sits at Ottawa, Montreal and Toronto. It reports to Parliament through the Minister of Manpower and Immigration.

Indian Claims Commission. This Commission, established by Order in Council PC 1969-2405, is responsible for studying Indian grievances and claims in consultation with Indian representatives and reporting on means for settlement. The one Commissioner reports to the Governor in Council through the Prime Minister.

Industrial Development Bank. The Bank, a subsidiary of the Bank of Canada, was incorporated in 1944 (RSC 1970, c.I-9) to supplement the activities of other lenders with particular consideration to the financing problems of small enterprises.

Information Canada. This organization, established April 1, 1970, was created to explain to Canadians the many aspects of the federal government, its programs and services. Such information is produced and disseminated by conventional means and also through regional inquiry centres set up across the country. Equally important is its responsibility to provide the federal government departments and agencies with

information on the attitudes and opinions of the Canadian people, as expressed individually or through the media. On request, the organization will co-ordinate federal information programs and assist departments and agencies to improve the quality and efficiency of their information services.

On the date of its establishment, Information Canada assumed responsibility for the publishing functions of the Queen's Printer and for the Canadian Government Exhibition Commission (now Information Canada - Expositions Division); it also assumed responsibility for the Still Photo Library of the National Film Board (now Information Canada - Photothèque). Information Canada reports to Parliament through the Minister of Labour.

Inspector General of Banks. The Inspector General of Banks is required by Parliament to conduct examinations and inquiries into the affairs and business of chartered banks and the bank incorporated under the Quebec Savings Bank Act to satisfy himself that the provisions of the respective acts are being observed and that the banks are in a sound financial position. The Department of Finance includes the Office of the Inspector General of Banks.

Inter-American Development Bank (Canadian Section). Canada became a full member of the Inter-American Development Bank in May 1972. The Secretary of State for External Affairs reports to Parliament for the Canadian Section of the Bank.

International Boundary Commission. The Commission functions by virtue of the treaty of 1925 (RSC 1970, c.1-19) between Canada and the United States. The International Boundary Commissioners, one for Canada and one for the United States, are empowered to inspect the boundary, to repair, relocate and rebuild monuments, to keep the boundary vistas open, to maintain at all times an effective boundary line, and to determine the location of any point on the boundary which may become necessary in the settlement of any question that may arise between the two governments. The staff of the Canadian section of the Commission is provided by the Department of Energy, Mines and Resources, but the Canadian Commissioner reports to the Secretary of State for External Affairs. The Commissioners meet at least once annually, alternately in Ottawa and Washington.

International Development Research Centre. Established as a public corporation by Act of Parliament (RSC 1970, c.21, 1st Supp.), the International Development Research Centre is an international organization supported financially by Canada. Its objectives are to initiate, encourage, support and conduct research into the problems of developing countries and into methods of applying and adapting scientific and technical knowledge to their socio-economic advancement. One of the Centre's chief purposes is to assist these countries to develop their own research skills and facilities.

The International Development Research Centre's board of governors consists of a chairman, a president and not more than 19 other members, nine of whom must be Canadian citizens. The Centre reports to Parliament through the Secretary of State for External Affairs.

International Fisheries Commissions. The Minister of Fisheries reports to Parliament for the Canadian sections of the several international fisheries commissions of which Canada is a member.

International Joint Commission. This Commission was established under a Britain - United States treaty signed January 11, 1909 and ratified by Canada in 1911 (SC 1911, c.28, as amended). The Commission, composed of six members (three appointed by the President of the United States and three by the Government of Canada), is governed by five specific Articles of the Boundary Waters Treaty of 1909. The Commission's approval is required for any use, obstruction or diversion of boundary waters affecting the natural level or flow of boundary waters in the other country; and for any works in waters flowing from boundary waters or below the boundary in rivers flowing across the boundary which raise the natural level of waters on the other side of the boundary.

Problems arising along the common frontier are also referred to the Commission by either country for examination and report, such report to contain appropriate conclusions and recommendations. In addition, questions or matters of difference between the two countries may be referred to the Commission for decision, provided both countries consent.

The Commission has been given responsibilities under the Canada - United States Great Lakes Water Quality Agreement of April 15, 1972 to assist in the implementation of the Agreement by co-ordinating the various programs referred to therein and monitoring their effectiveness.

The Commission reports to the Secretary of State for External Affairs of Canada and to the Secretary of State of the United States.

Interprovincial Boundary Commission. The Manitoba-Saskatchewan Interprovincial Boundary Commission, consisting of a commissioner from each province and the Surveyor General of Canada, is the only commission concerned with boundaries between provinces. However, there are also boundary commissions responsible for the borders between the following provinces and territories: Manitoba and the Northwest Territories; Saskatchewan and the Northwest Territories; Alberta and the Northwest Territories; and British Columbia, the Yukon Territory and the Northwest Territories. All these commissions report to Parliament through the Minister of Energy, Mines and Resources.

Law Reform Commission of Canada. The Law Reform Commission of Canada was established (RSC 1970, c.23, 1st Supp.) as a permanent body to study and keep the statutes and other laws of Canada under continuing and systematic review and in this way to complement the legislative and judicial processes. The work of the Commission is carried out with a view to making recommendations for their improvement, modernization and reform, including, without limiting the generality of the foregoing: the removal of anachronisms and anomalies in the law; the reflection in and by the law of the distinctive concepts and institutions of the common law and civil law legal systems in Canada, and the reconciliation of differences and discrepancies in the expression and application of the law arising out of differences in those concepts and institutions; the elimination of obsolete laws; and the development of new approaches to and new concepts of the law in keeping with and responsive to the changing needs of modern Canadian society and of individual members of that society. The Law Reform Commission reports to Parliament through the Minister of Justice.

Library of Parliament. The Library of Parliament as such was established in 1871 (SC 1871, c.21) although it existed earlier. It currently functions under RSC 1970, c.L-7. The Library of Parliament keeps all books, maps and other articles that are in the joint possession of the Senate and the House of Commons. The Parliamentary Librarian is also responsible for the Parliamentary Reading Room. Persons entitled to borrow books from the Library of Parliament are the Governor General, members of the Privy Council, members of the Senate and the House of Commons, officers of the two Houses, judges of the Supreme Court of Canada and the Federal Court of Canada, and members of the Press Gallery. In addition, books are lent to other libraries and government agencies and reference service is given to scholars. A special research branch serves parliamentarians only. The Parliamentary Librarian has the rank of a Deputy Head of a department and is responsible for the control and management of the Library under the Speaker of the Senate and the Speaker of the House of Commons assisted by a joint committee appointed by the two Houses.

Machinery and Equipment Advisory Board. The Machinery and Equipment Advisory Board, established in 1968, is responsible for considering applications for remission of duty on machinery and equipment classifiable under Tariff Items 42700-1 and/or 41100-1 and for advising the Minister of Industry, Trade and Commerce as to the eligibility of such machinery for remissions according to the provisions of these two tariff items. The Board is composed of a chairman and the Deputy Ministers of Industry, Trade and Commerce, Finance and National Revenue. It is assisted by the branches of the Department of Industry, Trade and Commerce concerned with individual industries, including machinery manufacturing. The objective of the Machinery Program, which is administered by the Board, is to increase efficiency throughout Canadian industry by enabling machinery users to acquire advanced equipment at the lowest possible cost, while at the same time affording Canadian machinery producers tariff protection on what they manufacture.

Medical Research Council. Established in 1969 and operating under authority of RSC 1970, c.M-9, the Council is a departmental Crown corporation of the federal government. It is composed of a president, a vice-president, and 20 members. The primary aim of the Council is the support and development of research in the health sciences in Canadian universities and affiliated institutions. It reports to Parliament through the Minister of National Health and Welfare.

Merchant Seamen Compensation Board. The Board is established by authority of the Merchant Seamen Compensation Act (RSC 1970, c.M-11) and reports to the Minister of Labour. The three members are appointed by the Governor in Council. The Board meets, as required, to adjudicate claims for compensation made by injured seamen employed on ships registered in Canada when they are not entitled to workmen's compensation under any provincial Workmen's Compensation Act or the Government Employees Compensation Act.

Ministry of State for Science and Technology. This Ministry was established by Order in Council PC 1971-1695 on August 11, 1971, with the primary purpose of formulating and developing policies in relation to the activities of the Government of Canada that affect the development and application of science and technology. It is organized into three principal branches - International, Policy and Domestic. The Minister of State for Science and Technology is also designated as the Minister for the Science Council Act, the Cabinet member to whom the Science Council of Canada reports.

Ministry of State for Urban Affairs. The Ministry of State for Urban Affairs was created by Proclamation, in accordance with the Government Organization Act 1970 (SC 1971, c.42), on June 30, 1971 to develop, co-ordinate, and undertake critical studies of federal policies that affect Canadians living in cities and towns.

The Ministry's task is to develop the most appropriate means by which the federal government may influence the evolution of the urbanization process in Canada; to integrate urban policy with other policies and programs of the federal government; and to foster co-operative relationships in the area of urban affairs with the provinces, and through them, with their municipalities, and with public and private organizations.

Under the direction of the Secretary and two Assistant Secretaries, the Ministry is divided into two operating wings: Policy and Research, and Co-ordination; there are also two service branches: Communications and Administration. These units contribute interdependently to fulfil the three main functions of the Ministry: policy development, co-ordination and research.

Ministry of Transport. The role and structure of the former Department of Transport were changed and a Ministry was created February 17, 1970. The new Ministry is a corporate structure of Crown corporations and operating administrations with varying degrees of autonomy, together with separate agencies for development and economic regulation. A Ministry headquarters staff supports the Minister and Deputy Minister in the functions of planning, policy formulation and assessment of program achievements in terms of the objectives of the Ministry.

The Canadian Marine Transportation Administration co-ordinates the functions of the St. Lawrence Seaway Authority, the National Harbours Board and the Marine Services components of the former Department of Transport. Its operations include management of the St. Lawrence Seaway through the St. Lawrence Seaway Authority and direct supervision of ten harbours and other facilities through the National Harbours Board; 300 public harbours and 11 others are administered by commissions under the supervision of the Ministry. It is also responsible for aids to navigation, search and rescue, nautical and pilotage services, marine agencies, steamship inspection and the Canadian Coast Guard.

The Canadian Air Transportation Administration controls and operates Canada's airways and federal airports and provides technical supervision in Canadian airspace of all aeronautical activities in the flight safety sense. These activities are conducted through the branches of Civil Aeronautics, Telecommunications and Electronics, Airports and Field Operations, Air Traffic Control, and Construction Engineering and Architectural, and the support branches of Corporate Planning, Finance and Personnel. The Canadian Air Transportation Administration also provides telecommunications and flight services to other components of the Ministry.

The Canadian Surface Transportation Administration has planning, programming and co-ordinating responsibilities relating to federal participation in the development and, where appropriate, operation of railway and highway systems, ferry services and bridges. The Administration has an ongoing interest in emerging technology in the area of new modes of surface transportation and their potential for application in new operating systems.

The recently organized Arctic Transportation Agency is responsible for developing and administering policy related to Ministry-supported transportation facilities and services in the Canadian North, in furtherance of the government's national objectives there. Intermodal relationships between air, surface and marine transportation systems are a particular concern, as well as the compatibility of these systems with economic and technological growth in the North and with the needs of the residents. In this connection there is a special relationship between the Agency and the Department of Indian Affairs and Northern Development.

The Transportation Development Agency is responsible for initiating, promoting and co-ordinating transportation research and development activities, working closely with government agencies, industry and the academic community to provide a national focus for changing technology and development opportunities in the field of transportation.

The Ministry also includes Air Canada, Canadian National Railways, and Northern Transportation Company Limited. These three Crown corporations are autonomous, maintaining close consultation with the Minister to be consistent with the government's general policies in the field of transportation. The Minister of Transport also reports to Parliament for the Canadian Transport Commission, the National Harbours Board and the St. Lawrence Seaway Authority.

Municipal Development and Loan Board. Established by the Municipal Development and Loan Act (SC 1963, c.13) to handle the financial administration of federal loans to municipalities for capital works programs, this Board is still legally in existence, but is no longer operative.

National Advisory Council on Fitness and Amateur Sport. The Council was set up under the Fitness and Amateur Sport Act (RSC 1970, c.F-25) to consider problems connected with the objectives of the Fitness and Amateur Sport Program. The Program was inaugurated in 1961 to increase the number of participants at all levels of competitive and non-competitive physical recreation and amateur sport activity ranging from day camps to the Canada and Olympic Games. The Council, consisting of not more than 30 members appointed by the Governor in Council with at least one from each province, advises the Minister of National Health and Welfare.

National Arts Centre Corporation. The Act establishing this Corporation (RSC 1970, c.N-2) was assented to July 15, 1966. The Corporation consists of a board of trustees composed of a chairman, a vice-chairman, the mayors of Ottawa and Hull, the Director of the Canada Council, the President of the Canadian Broadcasting Corporation, the Government Film Commissioner and nine other members appointed by the Governor in Council for terms not exceeding three years, except for the first appointees whose terms range from two to four years. The objects of the Corporation are to operate and maintain the National Arts Centre, to develop the performing arts in the National Capital Region and to assist the Canada Council in

the development of the performing arts elsewhere in Canada. The Corporation reports to Parliament through the Secretary of State.

National Battlefields Commission. This Commission was established by Act of Parliament in 1908 (SC 1908, cc.57-58, as amended) to preserve the Historic Battlefields at Quebec City. Composed of nine members, seven appointed by the federal government and one each by Ontario and Quebec, the Commission is supported by the federal government through annual appropriations and is responsible to Parliament through the Minister of Indian Affairs and Northern Development.

National Capital Commission. This Commission, successor to the Federal District Commission, is a Crown agency created by the National Capital Act (RSC 1970, c.N-3), proclaimed February 6, 1959. Headed by a chairman, it is made up of 20 members, representing the ten provinces of Canada, and its work force fluctuates between 600 and 850, depending on the season.

The Commission is responsible for the acquisition, development and maintenance of public lands in the National Capital Region; it co-operates with municipalities by providing planning aid or financial assistance in municipal projects of benefit to the region; and it advises the Department of Public Works on the siting and appearance of all federal government buildings in the 1,800-sq mile National Capital Region. The Commission reports to Parliament through the Minister of State for Urban Affairs.

National Council of Welfare. The National Council of Welfare consists of 21 private citizens, drawn almost equally from organizations of consumers of welfare services and from institutions involved, directly or indirectly, in the provision of welfare services. In the former category are members of low income and welfare rights groups and of organizations of native people, both Indian and Métis. In the latter category are persons involved in the social service delivery system, at both the staff and volunteer levels, and in the field of social work education.

The role of the Council is to advise the Minister of National Health and Welfare on matters related to welfare. The Office of the National Council of Welfare acts as a supportive secretariat to the Council and provides a communication and liaison link between organizations of welfare consumers and the program activities of the department.

National Design Council. The National Design Council was established by Act of Parliament in 1961 (RSC 1970, c.N-5) to promote and expedite improvement of design in the products of Canadian industry. The Council makes recommendations on design policies and the planning of programs for the furtherance of design in Canada to be implemented through departments and agencies of the federal government, regional governments and other private and institutional bodies. Programs formally recognized by the Council are identified under the title of "Design Canada". The Council has 17 members appointed by the Governor in Council and reports through its chairman to the Minister of Industry, Trade and Commerce.

National Energy Board. This Board was established under the National Energy Board Act, 1959 (RSC 1970, c.N-6) for the purpose of assuring the best use of energy resources in Canada. The Board, composed of seven members, is responsible for regulating the construction and operation of the oil and gas pipelines that are under the jurisdiction of the Parliament of Canada, the tolls charged for transmission by oil and gas pipelines, the export and import of gas and the import of motor gasoline and motor gasoline-blending components, the export of electric power, and the construction of the lines over which power is exported or imported. The Board is also required to study and keep under review all matters relating to energy under the jurisdiction of the Parliament of Canada and to recommend such measures as it considers necessary and advisable on the subject. The Board reports to Parliament through the Minister of Energy, Mines and Resources.

National Farm Products Marketing Council. This Council was established in 1972 under the National Farm Products Marketing Agencies Act (SC 1972, c.65). The Council consults with producers, commodity boards, and provincial and federal governments and co-ordinates their views on the establishment and operation of national marketing agencies. It assists and supervises the operations of agencies and promotes more effective marketing of farm products in interprovincial and export trade. The goal is to maintain and promote an efficient, competitive and expanding agricultural industry.

The Council consists of a chairman, a vice-chairman, two full-time and two part-time members, appointed by the Governor in Council and is directly responsible to the Minister of Agriculture. Council headquarters is in Ottawa.

National Film Board. The National Film Board, established in 1939, operates under the National Film Act (RSC 1970, c.N-7) which provides for a board of governors of nine members — a Government Film Commissioner, appointed by the Governor in Council, who is chairman of the Board, three members from the Public Service of Canada and five members from outside the Public Service. The Board reports to Parliament through the Secretary of State. The Board is responsible for advising the Governor in Council on film activities and is authorized to produce and distribute films in the national interest and, in particular, films "designed to interpret Canada to Canadians and to other nations". The Board is responsible for the production and processing of films for government departments. Its head office is located in Ottawa and its operations are carried out in Montreal.

National Harbours Board. The Board was established by Act of Parliament in 1936 (RSC 1970, c.N-8). It is responsible for the administration of port facilities at the harbours of St. John's, Nfld.; Halifax, NS; Saint John and Belledune, NB; Chicoutimi, Quebec, Trois-Rivières and Montreal, Que.; Churchill, Man.; Vancouver and Prince Rupert, BC; the Jacques Cartier and Champlain bridges at Montreal, Que.; and the grain elevators at Prescott and Port Colborne, Ont. The Board reports to Parliament through the Minister of Transport.

National Library. The National Library came formally into existence on January 1, 1953, with the proclamation of the National Library Act (RSC 1970, c.N-11). It publishes *Canadiana*, a monthly catalogue of new publications relating to Canada, with an annual cumulation. The Library also publishes other bibliographies. Its Reference Branch maintains the Canadian Union Catalogue which embodies the author catalogues of the major libraries in the ten provinces and is thus a key to the book collections of the whole country. The Library's own book stock totals more than 400,000 volumes. The National Librarian reports to Parliament through the Secretary of State.

National Museums of Canada. The National Museums of Canada is a departmental Crown corporation established April 1, 1968, by the National Museums Act (RSC 1970, c.N-12). The corporation was established to join under one administration the four existing museum activities: the National Gallery of Canada; the National Museum of Man (including the Canadian War Museum); the National Museum of Natural Sciences; and the National Museum of Science and Technology (including the National Aeronautical Collection). The corporation reports to Parliament through the Secretary of State.

The board of trustees is composed of a chairman, a vice-chairman, an executive committee of five and seven additional board members. All these members of the board are appointed by Governor in Council for fixed terms of office. In addition there are two ex-officio members, the Director of the Canada Council and the President of the National Research Council.

The purposes of the corporation, according to the Act, are "to demonstrate the products of nature and the works of man, with special but not exclusive reference to Canada, so as to promote interest therein throughout Canada and to disseminate knowledge thereof". To these ends the corporation is empowered to: collect, classify, preserve and display objects relevant to its purposes; undertake or sponsor research relevant to its purposes; arrange for and sponsor travelling exhibitions of materials in, or related to, its collections; arrange for the publication or acquisition and the sale to the public of books, pamphlets, replicas and other materials related to its purposes; undertake or sponsor programs for the training of persons in the professions and skills involved in the operation of museums; arrange for or provide professional and technical services to other organizations whose purposes are similar to any of those of the corporation on such terms and conditions as may be approved by the Minister; and generally, do and authorize such things as are incidental or conducive to the attainment of the purposes of the corporation and the exercise of its powers.

National Parole Board. The National Parole Board was established in January 1959 by the Parole Act (RSC 1970, c.P-2), which gives it absolute authority for parole of inmates under sentence of imprisonment imposed under an Act of Parliament or for criminal contempt of court. Under the Act the Board has jurisdiction over all matters of federal parole, except for commuted death sentences for capital or non-capital murder. In such cases eligibility is possible after ten years but consent for eligibility and for release on parole must come from the Governor in Council. The Board is composed of a chairman and eight other members appointed by Order in Council for ten years. The Board reports to Parliament through the Solicitor General of Canada.

National Research Council of Canada. This is an agency of the federal government established in 1916 to promote scientific and industrial research. The Council operates science and engineering laboratories in Ottawa, Halifax and Saskatoon; gives direct financial support to research carried out in Canadian university and industrial laboratories; sponsors associate committees co-ordinating research on specific problems of national interest; and develops and maintains the nation's primary physical standards. The federal government has designated NRC as the co-ordinating body for the further development of a national scientific and technical information system under the general direction of the National Librarian. Other activities include the provision of free technical information to manufacturing concerns; the publication of research journals; and representation of Canada in International Scientific Unions. Patentable inventions developed in the Council's laboratories are made available for manufacture through a subsidiary company, Canadian Patents and Development Limited. The National Research Council consists of a president, three vice-presidents and 17 members representing Canadian universities, industry and labour. The Council is incorporated under the National Research Council Act (RSC 1970, c.N-14) and reports to Parliament through a designated Minister, at present the President of the Treasury Board.

New Brunswick Multiplex Corporation. This Corporation was established under the terms of a formal agreement between the federal and provincial governments on February 2, 1971. The object of the Corporation is to develop preliminary plans for the creation of a metal-working industrial complex centred in Saint John, NB. The Corporation reports to Parliament through the Minister of Regional Economic Expansion.

Northern Canada Power Commission. The Commission was established by Act of Parliament in 1948 (RSC 1970, c.N-21) to provide power to points in the Northwest Territories where a need developed and where power could be supplied on a self-sustaining basis; the Act was amended in 1950 to give the Commission authority to provide similar services in the Yukon Territory. The name of the Commission (formerly the Northwest Territories Power Commission) was changed in 1956. It is composed of a chairman and two members appointed by the Governor in Council and reports to Parliament through the Minister of Indian Affairs and Northern Development.

Northern Transportation Company Limited. This Company was incorporated in 1947 under the title of Northern Transportation Company (1947) Limited, the date being omitted from the name in 1952. Previously a company chartered under an Alberta statute, it has been a wholly owned subsidiary of Eldorado Nuclear Limited since that Crown company was established and carries out the business of a common carrier in the Mackenzie River watershed and the western Arctic. The Company is responsible to Parliament through the Minister of Transport.

Office of the Auditor General. This Office originated in 1878 and currently functions under the Financial Administration Act (RSC 1970, c.F-10). The Auditor General is responsible for examining accounts relating to the Consolidated Revenue Fund and to public property, and for reporting annually to the House of Commons the results of his examinations. He also audits the accounts of various Crown corporations and other organizations. The Minister of Finance acts as spokesman in Parliament for the Auditor General.

Office of the Chief Electoral Officer. This Office was established in 1920 under the provisions of the Dominion Elections Act, now the Canada Elections Act (RSC 1970, c.14, 1st Supp.), and is responsible for the conduct of all federal elections as well as the elections of members of the Northwest Territories Council and of the Yukon Territory Council. In addition, it conducts any vote taken under the Canada Temperance Act. The Chief Electoral Officer is responsible directly to the House of Commons, the President of the Privy Council acting as spokesman for him in the Cabinet.

Office of the Custodian of Enemy Property. Under the Trading with the Enemy (Transitional Powers) Act (SC 1947, c.24), the Custodian is responsible for all enemy property reported to him, received or controlled by him or vested in him by virtue of the Regulations. After the war, enemy assets vested in the Custodian are either confiscated, liquidated and the proceeds used to pay compensation to Canadians in respect of war claims, or released to their former owners, in accordance with postwar statutes and Orders in Council adopted pursuant to peace treaties and other international agreements.

The Minister of Supply and Services is the Custodian of Enemy Property.

Office of the Representation Commissioner. The Office was established in 1963 under the provisions of the Representation Commissioner Act (RSC 1970, c.R-6). After each decennial census, the Representation Commissioner is responsible for preparing maps showing the distribution of population in each province and setting out alternative proposals respecting the boundaries of electoral districts in each province. These maps are supplied to the ten electoral boundaries commissions (one for each province) established under the provisions of the Electoral Boundaries Readjustment Act (RSC 1970, c.E-2). The Representation Commissioner is a member of each of the ten commissions. The Secretary of State acts as spokesman for the Office in the Cabinet and the House of Commons.

Panarctic Oils Limited. This corporation is a consortium of oil and gas companies, individuals and the federal government formed in 1967 to explore for oil and gas in the Arctic area. Panarctic Oils Ltd. is not a Crown corporation and does not report to Parliament.

Pension Appeals Board. This Board, established under the Canada Pension Plan Act (RSC 1970, c.C-5) hears appeals under the Canada Pension Plan and under certain provincial pension plans. The Board consists of a judge of the Federal Court of Canada or of a superior court of a province appointed as chairman and not less than two and not more than five other persons, each of whom must be a judge of the Federal Court or of a superior, district or county court of a province. For purposes of appeals under the Canada Pension Plan, the Board reports to Parliament through the Minister of National Health and Welfare.

Pension Review Board. The Pension Review Board was created under the Minister of Veterans Affairs by the amendments to the Pension Act 1971 (SC 1970-71, c. 31). Composed of a chairman and four other members, the Board is an independent and autonomous body that hears appeals from pension applicants dissatisfied with decisions of an Entitlement Board or two members of the Canadian Pension Commission. The Board is also the responsible body when matters of interpretation of the Acts are at issue.

Pilotage Authorities. The Pilotage Act (SC 1971, c.52) established the Atlantic Pilotage Authority, the Laurentian Pilotage Authority, the Great Lakes Pilotage Authority and the Pacific Pilotage Authority as proprietary corporations as specified in Schedule D of the Financial Administration Act. The objects of each Authority are to establish, operate, maintain and administer in the interests of safety an efficient pilotage service within the region set out in respect of the Authority. Each of the four Authorities has a

chairman and not more than six other members appointed by the Governor in Council for a term not exceeding ten years. The Pilotage Authorities report to Parliament through the Minister of Transport.

Post Office Department. Administration and operation of the Canada Post Office, by virtue of the Post Office Act (RSC 1970, c.P-14) and under the Postmaster General, includes all phases of postal activity, personnel, mail handling, transportation of mails by land, water, rail and air and the direction and control of financial services including the operation of the money order service.

The Department's headquarters is located in Ottawa, with regional headquarters in Halifax, Montreal, Toronto and Vancouver. District offices are located in St. John's, Halifax, Saint John, Quebec City, Montreal, Ottawa, North Bay, Toronto, London, Winnipeg, Saskatoon, Edmonton and Vancouver.

Prairie Farm Rehabilitation Administration (PFRA). The PFRA was established in 1935 (RSC 1952, c. 214) to assist in the rehabilitation of agricultural lands seriously affected by drought and soil drifting in Manitoba, Saskatchewan and Alberta. Since then it has turned 2.5 million acres of marginal and submarginal land into community pastures and has been instrumental in the construction of many large irrigation and water-control projects. At the farm level, the PFRA has assisted 100,000 dugout projects for irrigation, stock-watering and domestic water supplies. It has also distributed up to 10 million seedlings a year for farm shelterbelts. As an entity within the Department of Regional Economic Expansion, the PFRA has the additional responsibility of implementing departmental programs in Alberta, Saskatchewan and Manitoba.

Preparatory Commission for Metric Conversion (Metric Commission). This Commission was established by Order in Council PC 1971-1146, June 1971. It consists of a full-time chairman and up to 20 part-time commissioners all of whom are appointed by the Governor in Council for a term of three years. An executive director acts for the Commission in directing the full-time staff.

The Commission advises the Minister of Industry, Trade and Commerce on plans for conversion to the metric system and on the need for legislation. It also initiates, co-ordinates and undertakes investigations, surveys and studies relating to the implications of conversion to the metric system in different sectors of the Canadian economy. It prepares, in consultation and co-operation with any department or agency of the Government of Canada and of any province, the Standards Council of Canada, or other interested parties, an over-all program for conversion to the metric system which will ensure, as far as possible, that any programs are phased and co-ordinated in order to maximize the benefits of conversion while minimizing the costs. The Commission also furnishes, publishes and disseminates information concerning conversion to the metric system.

Privy Council Office. For administrative purposes, the Privy Council Office is regarded as a department of government under the Prime Minister. The Clerk of the Privy Council, under whose direction its functions are carried out, is considered as a Deputy Head and takes precedence among the chief officers of the Public Service. The authority of the Privy Council Office is to be found in Sections 11 and 130 of the British North America Act, 1867, which constituted a Council to aid and advise in the Government of Canada to be styled the Queen's Privy Council for Canada. In 1940, with the wartime development of Cabinet committees and the consequent need for orderly secretarial procedures such as agenda, explanatory memoranda and minutes, the Principal Secretary in the Prime Minister's Office was designated Clerk of the Privy Council and Secretary to the Cabinet. Since 1946, the Privy Council Office has been further reorganized, developed and enlarged and certain administrative functions of the Privy Council Office and the Prime Minister's Office have been closely integrated in the interests of efficiency and economy.

The organization of the Privy Council Office at present consists primarily of the Cabinet Secretariat with the following divisions reporting to the Clerk of the Privy Council and Secretary to the Cabinet: Deputy Secretary to the Cabinet (Operations); Deputy Secretary to the Cabinet (Plans); and Deputy Secretary to the Cabinet (Federal-Provincial Relations). Within the Privy Council Office, submissions to the Governor in Council are received, draft orders and regulations prepared, approved Orders are circulated and, in addition, the duties of editing, registering and publishing the federal statutory regulations in Part II of the *Canada Gazette* are carried out. The various secretaries deal with secretarial work for the Cabinet and for Cabinet committees and interdepartmental committees. This involves the preparation and circulation of agenda and necessary documents to Ministers and recording and circulating decisions; liaison with departments and agencies of the government; and the preparation of material for the Prime Minister.

The Office of the Prime Minister is organized as a Secretariat associated with the Privy Council Office and includes members of the Prime Minister's personal staff responsible for arranging the release of the Prime Minister's statements on matters of public interest, his public appearances and appointments to interview him. They also handle general secretarial business, draft letters and assist the Prime Minister in his Parliamentary duties.

Public Archives. The Public Archives was founded in 1872 and is administered under the Public Archives Act (RSC 1970, c.P-27) by the Dominion Archivist who has the rank of a Deputy Minister and reports to Parliament through the Secretary of State. Its purpose is to assemble and make available to the public a comprehensive collection of source material relating to the history of Canada. It also has broad

responsibilities in regard to the promotion of efficiency and economy in the management of the federal government records. The Historical Branch, located in the National Library and Archives Building, is a centre for research on the development of Canada. In addition to the selected records of the federal government, it possesses an extensive collection of private papers of individuals and societies, a map collection which is the most important of its kind in the country, and an extensive collection of paintings, drawings, prints, photographs, sound recordings and films relating to Canada. A specialized library is also at the disposal of searchers. The Records Management Branch operates a large Records Centre in Ottawa and regional centres in Toronto, Montreal and Vancouver where non-current departmental records are centralized, stored and serviced. It assists departments in their records management programs. The Administration and Technical Services Branch operates the Central Microfilm Unit for the several departments of government.

Under the terms of the Laurier House Act (RSC 1952, c.163), the Public Archives is responsible for the administration of Laurier House as a museum.

Public Service Commission. Arrangements were made for civil service appointments under the first Civil Service Act of 1868 but the first Civil Service Commission was not created until 1908. This established the beginnings of the merit system which is today the cornerstone of personnel administration in the Public Service. The Act of 1918 gave the Commission authority to control recruitment, selection, appointment, classification and organization and to recommend rates of pay. The next Civil Service Act, passed in 1961, strengthened the principles of the merit system, clarified the Commission's role in other areas of personnel administration, and gave the staff associations the right to be consulted on matters about remuneration and conditions of employment.

The Public Service Employment Act (RSC 1970, c.P-32) which came into force on March 13, 1967, redefined the Commission's role as the central staffing agency and extended its authority to the Public Service, covering certain groups of employees exempt from the previous Acts. The Public Service is specified in Schedule A of the Public Service Staff Relations Act. It does not include Crown corporations, such as the Canadian Broadcasting Corporation, the Central Mortgage and Housing Corporation, the Canadian National Railways and Air Canada. The new Act also reaffirms the merit principle, at the same time permitting delegation of the Commission's authority, although not its responsibility to Parliament. Under the Act, the Commission is relieved of responsibility for recommending rates of pay and conditions of service to the government, for classification, and for consultation with staff associations on matters that are now the subject of collective bargaining.

On November 9, 1972, the Commission was assigned the duty, by Order in Council PC 1972 - 2569, of investigating cases of alleged discrimination on grounds of sex, race, national origin, colour or religion with respect to the application and operation of the Public Service Employment Act, and an Investigation Branch has been established for this purpose.

The Public Service Commission reports directly to Parliament. The Secretary of State has traditionally been the Minister who presents the Commission's report to the House of Commons.

Public Service Staff Relations Board. Established in 1967 by the Public Service Staff Relations Act (SC 1967, c.72), the Board is an independent body which is responsible for determining bargaining units, certifying bargaining agents, dealing with complaints of unfair practices and generally overseeing the administration of the legislation providing for collective bargaining in the Public Service of Canada. The Board consists of a full-time chairman and vice-chairman who hold office for a period of ten years and up to eight part-time members, equally representative of the interests of employees and the interests of the employer, who hold office for seven years. Under the Act, the Public Service Staff Relations Board reports to Parliament, through such Minister of the Crown, other than a member of the Treasury Board, as may be designated by the Governor in Council. At present the Board reports through the President of the Privy Council.

Queen Elizabeth II Canadian Research Fund. The Queen Elizabeth II Canadian Research Fund Act (SC 1959, c.33) established the Fund of \$1 million to be administered by a board of trustees to aid in research on the diseases of children. The Prime Minister reports to Parliament on the operations of the Fund.

Restrictive Trade Practices Commission. The Restrictive Trade Practices Commission, domiciled in the Department of Consumer and Corporate Affairs, is responsible under the Combines Investigation Act (RSC 1970, c.C-23) for appraising evidence submitted to it by the Director of Investigation and Research and the parties under investigation, holding hearings and making reports to the Minister.

Roosevelt Campobello International Park Commission. Established by the Roosevelt Campobello International Park Commission Act (SC 1964/65, c.19), the Commission consists of six members, three appointed by the Government of Canada and three by the Government of the United States to administer the Roosevelt Campobello International Park, at Campobello, NB. The Canadian section of the Commission reports to Parliament through the Secretary of State for External Affairs.

Royal Canadian Mint. The Royal Canadian Mint has been in operation since 1908. It was first established as a branch of the Royal Mint under the (Imperial) Coinage Act of 1870, and opened on January 2, 1908. On December 1, 1931, it became the Royal Canadian Mint and operated as a branch of the Department of

Finance. In 1969, the Mint became a Crown agency corporation, reporting to Parliament through the Minister of Supply and Services. It operates under authority of RSC 1970, c.R-8.

The latter change was made to provide for a more industrial type of organization and for flexibility in producing coins of Canada and other countries; buying, selling, melting, assaying and refining gold and other precious metals; and producing metals, plaques and other devices. The Mint has a seven-man board of directors appointed by the Governor in Council — the Master of the Mint who is its chief executive officer appointed to serve during pleasure, the chairman who is appointed for a four-year period, subject to re-appointment, and five other directors, two from inside and three from outside the Public Service, who are appointed for terms of three years. The Mint now operates basically as a manufacturing enterprise, with the object of making a small profit. Financial requirements are provided through loans from the Consolidated Revenue Fund.

Royal Canadian Mounted Police. The Royal Canadian Mounted Police, a civil force maintained by the federal government, was organized in 1873 as the North-West Mounted Police. It now operates under the Royal Canadian Mounted Police Act (RSC 1970, c.R-9) and is responsible for enforcing federal laws throughout Canada. By agreement with the governments of eight provinces (all provinces except Ontario and Quebec) it is also responsible for enforcing provincial laws within those provinces and for policing many district municipalities, cities and towns. In the Yukon Territory and Northwest Territories the RCMP provides law enforcement services under contracts with the territorial governments. A Commissioner, appointed by the Governor in Council, has the control and management of the Force and of all matters connected therewith; he functions under the direction of the Solicitor General of Canada.

St. Lawrence Seaway Authority. The St. Lawrence Seaway Authority was established by Act of Parliament in 1951 (RSC 1970, c.S-1) and came into force by proclamation on July 1, 1954. The Authority was incorporated for the purposes of constructing, maintaining and operating all such works as may be necessary to provide and maintain, either wholly in Canada or in conjunction with works undertaken by an appropriate authority in the United States, a deep waterway between the Port of Montreal and Lake Erie. The Crown corporation, Seaway International Bridge Corporation Limited, is subsidiary to the St. Lawrence Seaway Authority. The Authority is composed of a president, a vice-president and a member, and reports to Parliament through the Minister of Transport.

Science Council of Canada. The Science Council of Canada was established in 1966 (RSC 1970, c.S-5) and became a Crown corporation on April 1, 1969. The Council consists of 25 members each having a specialized interest in science or technology and four associate members chosen from among officers or employees of the federal government. Members hold office for terms of not more than three years and associate members hold office during pleasure. All are appointed by the Governor in Council. The duties of the Science Council are to assess in a comprehensive manner Canada's scientific and technological resources, requirements and potentialities and to make recommendations thereon. The Council reports to Parliament through a designated Minister, at present the Minister of State for Science and Technology.

Seaway International Bridge Corporation Limited. The Seaway International Bridge Corporation Limited was established under the Companies Act, by Letters Patent, November 13, 1962. It operates the international toll bridges system between Cornwall, Ont. and Roosevelttown, NY on behalf of the owners, the St. Lawrence Seaway Authority and the Saint Lawrence Seaway Development Corporation. It reports to Parliament through the Minister of Transport.

Secretariat of the Interdepartmental Committee on the 1976 Olympic Games. This Secretariat was established by Cabinet to co-ordinate all federal activities related to the 1976 Olympic Games. The Committee performs a liaison function with the Olympic Games Organization Committee (COJO), the cities of Montreal and Kingston, and the Quebec and Ontario governments; it ensures that appropriate federal departments and agencies are informed of and prepared to evaluate requests from COJO for federal assistance within the framework of government policy. In addition, the Committee is responsible for expediting the preparation of necessary legislation and regulations, and for keeping Cabinet informed about federal involvement in Olympic preparations.

Standards Council of Canada. The Council was established by Act of Parliament (RSC 1970, c.41, 1st Supp.) which received Royal Assent on October 7, 1970. Its objectives are to foster and promote voluntary standardization in fields relating to the construction, manufacture, production, quality, performance and safety of buildings, structures, manufactured articles and products and other goods, including components thereof, not expressly provided for by law, as a means of advancing the national economy, benefiting the health, safety and welfare of the public, assisting and protecting consumers, facilitating domestic and international trade and furthering international co-operation in the field of standards. The Council is responsible for co-ordinating the planning and execution of a program for the development of standards in the metric (SI) system. This activity is in support of the over-all program which is being developed by the Preparatory Commission for Metric Conversion.

The Council consists of not more than 57 members, of whom six are federal representatives, ten represent the provinces and 41, various national organizations. Membership is broadly representative of all levels of government, primary and secondary industries, distributive and service industries, trade

associations, labour unions, consumer associations and the academic community. The Council reports to Parliament through the Minister of Industry, Trade and Commerce.

Statistics Canada. Statistics Canada became the new name for the Dominion Bureau of Statistics with the proclamation of a new Statistics Act (SC 1971, c.15) on May 1, 1971. The Bureau was initially set up by statute in 1918 as the central statistical agency for Canada (SC 1918, c.43). In 1948 this statute, which had been consolidated as the Statistics Act (RSC 1927, c.190), was repealed and replaced by the Statistics Act (RSC 1952, c.257) which was amended by SC 1952-53, c.18, assented to March 31, 1953. The 1971 Act replaces that statute.

The functions of Statistics Canada are to compile, analyze and publish statistical information relative to the commercial, industrial, financial, social and general condition of the people and to conduct regularly a census of population and agriculture of Canada as required under the Act.

Statistics Canada is a major publication agency of the federal government; its reports cover all aspects of the national economy and social conditions of the country. The administrative head of the bureau is the Chief Statistician of Canada who has the rank of a Deputy Head of a department and reports to Parliament through the Minister of Industry, Trade and Commerce.

Tariff Board. Constituted in 1931, the Board derives its duties and powers from four statutes: the Tariff Board Act (RSC 1970, c.T-1); the Customs Act (RSC 1970, c.C-40); the Excise Tax Act (RSC 1970, c.E-13); and the Anti-dumping Act (RSC 1970, c.A-15).

Under the Tariff Board Act, the Board makes inquiry into and reports on any matter in relation to goods that, if brought into Canada, are subject to or exempt from customs duties or excise taxes. Reports of the Board are tabled in Parliament by the Minister of Finance. It is also the duty of the Board to inquire into any other matter in relation to the trade and commerce of Canada that the Governor in Council sees fit to refer to the Board.

Under the provisions of the Customs Act, the Excise Tax Act and the Anti-dumping Act, the Tariff Board acts as a court to hear appeals from decisions of the Department of National Revenue. Customs and Excise, in respect of excise taxes, tariff classification, value for duty, drawback of customs duties and determination of normal value or export price in dumping matters. Declarations of the Board on appeals are final and conclusive but the Acts contain provisions for appeal on questions of law to the Federal Court and thence to the Supreme Court of Canada.

Tax Review Board. The Tax Review Board, created in 1949 as the Income Tax Appeal Board and later changed to the Tax Appeal Board, now operates under the Tax Review Board Act 1970 (SC 1970-71, c.11). The Board is declared by statute to be a court of record and has jurisdiction to hear appeals by taxpayers against their assessment under the Income Tax Act and also appeals under the Estate Tax Act, the Old Age Security Act and certain sections of the Canada Pension Plan. An appeal lies from the Board to the Federal Court of Canada and a further appeal from that court to the Supreme Court of Canada. The Board consists of a chairman, an assistant chairman and three other members. Its offices are located at Ottawa and it hears appeals at 28 centres throughout Canada as required and at the main centres, such as Montreal, Toronto and Vancouver, several times a year. The Board is under the jurisdiction of the Minister of Justice but is independent of the Department of Justice.

Telesat Canada. Telesat Canada was incorporated in 1969 by an Act of Parliament (RSC 1970, c.T-4). Its objectives are to establish satellite telecommunication systems providing telecommunication services on a commercial basis. The recommendations of a government task force on satellite policy and the use of satellite technology for domestic communications appointed in 1967 and a 1968 White Paper based to a large extent on those recommendations preceded the establishing legislation.

The authorized capital of the corporation consists of 10 million common shares without par value and 5 million preferred shares with a par value of \$10 per share. At the end of 1972, there were 6 million common shares issued and outstanding. The corporation will ultimately be owned by three main groups of shareholders: the federal government, the telecommunications common carriers and the general public. Currently, the corporation is owned by the first two groups.

Telesat is not a Crown corporation, nor is it an agent of Her Majesty. Its annual report is tabled in the House of Commons by the Minister of Communications.

Textile and Clothing Board. This Board was established by SC 1971, c.39 to receive complaints and conduct inquiries about textile and clothing goods imported into Canada under such conditions as to cause or threaten serious injury to Canadian production. After its investigative procedures are completed, the Board makes written recommendations to the Minister of Industry, Trade and Commerce. The Board consists of three members appointed by the Governor in Council and maintains its head office in the National Capital Region.

Treasury Board. The Treasury Board was first established as a committee of the Queen's Privy Council for Canada by Order in Council PC 3 of July 2, 1867, and was made a statutory committee in 1869. The Minister of Finance was appointed Chairman of the Board, with four other Privy Counsellors to be designated as members by the Governor in Council. The Secretary of the Board and the members of his staff were employed by the Department of Finance.

By the Government Organization Act, 1966 (SC 1966, c.25) the Board Secretariat was established as a separate department of government with its own Minister, the President of the Treasury Board. The committee constituting the Treasury Board includes, in addition to the President, the Minister of Finance and four other Privy Councillors.

The Financial Administration Act (RSC 1970, c.F-10), defines the Treasury Board's responsibilities as the central management agency of government. These responsibilities include the organization of the Public Service, financial management, long-term expenditure planning, and expenditure control, including allocation of resources among departments and agencies of government; management of personnel functions in the Public Service; and improvement in the efficiency of management and administration in the Public Service.

The staff of the Treasury Board is divided into four branches. The Administrative Policy Branch is responsible for the development, interpretation, dissemination and evaluation of policies, guidelines and regulations in administrative areas, including the financial management systems needed to provide for adequate visibility and accountability, and other administrative inputs to government operations such as accommodation, travel, contracting, electronic data processing, etc., with a view to ensuring probity and prudence in the acquisition of administrative inputs as well as their effective and efficient use in support of departmental programs. The Planning Branch is responsible for the development and application of systems and procedures for evaluating the effectiveness and efficiency of programs and projects and for providing advice and planning assistance for organizational change in government. The Personnel Policy Branch is responsible for all matters relating to personnel management in the Public Service including manpower requirements, manpower development and training, classification, compensation benefits, representing the government in collective bargaining with bargaining agents representing employees in the Public Service, and implementation of the government's objectives in bilingual matters as these affect the Public Service. The Program Branch is responsible for such matters as the financial management functions of short- and long-range expenditure forecasting, program analysis, expenditure control and estimates preparation.

The Secretariat of the Interdepartmental Committee on the 1976 Olympic Games reports to Parliament through the President of the Treasury Board, who is also the designated Minister responsible for the National Research Council and Canadian Patents and Development Limited.

Unemployment Insurance Commission. The Commission was established under the provisions of the Unemployment Insurance Act, 1940 (RSC 1970, c.U-2); the Act was revised in 1955 and again in 1971. It administers the Unemployment Insurance Act and performs other duties which the Minister of Manpower and Immigration may require.

The function of the Commission is to provide employed persons with insurance and, subject to regulations, make weekly payments to them for a limited time during periods of unemployment. Under the 1971 legislation, about 1.2 million more people are covered; only eight weeks of insured employment are required to qualify for some benefits; and under certain conditions an interruption of earnings caused by sickness or maternity can be covered. Minimum and maximum weekly benefits rates are fixed by the Act. Services of the Commission were also expanded to include a Claimant Assistance Program to help people become re-employed.

Three commissioners, consisting of the chairman who is chief executive officer, one commissioner representing employed persons and one representing employers, operate the Commission. It functions at three levels — head office in Ottawa, five regional offices and a number of district and other offices across the country. The Commission reports to Parliament through the Minister of Manpower and Immigration.

Uranium Canada, Limited. This Crown company, incorporated in June 1971 under the Canada Corporations Act (RSC 1970, c.C-32) pursuant to the Atomic Energy Control Act (RSC 1970, c.A-19), is an agency corporation under Schedule C of the Financial Administration Act (RSC 1970, c.F-10). It is for all its purposes an agent of Her Majesty and its powers may be exercised only as an agent of Her Majesty. The shares of the company, with the exception of the qualifying shares of the directors, are held by the Minister of Energy, Mines and Resources. Registered under the trade mark UCAN, the company is responsible to act as an agent on behalf of the federal government with respect to the acquisition and future sales of the joint stockpile of uranium concentrates established under the agreement with Denison Mines Limited, entered into January 1, 1971. Denison Mines Limited acts as the sales agent for the concentrates in the joint stockpile including negotiating for and endeavouring to secure contracts with customers. UCAN also acts as the agent on behalf of the federal government for future sales from the general government stockpile. The corporation's head office is in Ottawa.

War Veterans Allowance Board. This Board, established under the authority of the War Veterans Allowance Act, 1930 (RSC 1970, c.W-5) is a quasi-judicial body consisting of ten members, including a chairman and a deputy chairman, appointed by the Governor in Council. The Board administers the War Veterans Allowance Act and Part XI of the Civilian War Pensions and Allowances Act. Its functions include the responsibility of ensuring that the 19 district authorities, located in various regions throughout Canada, interpret the legislation in a fair, reasonable and equitable manner. The War Veterans Allowance Board is also an appeal body which may consider appeals against the decision of a district authority. It reports to Parliament through the Minister of Veterans Affairs.

Appendix 2

Synopsis of legislation passed in 1972

Synopsis of legislation of the fourth session of the twenty-eighth Parliament, February 17, 1972 to September 1, 1972 passed in the twenty-first year of the reign of Her Majesty Queen Elizabeth II

Chapter 1 (March 29) *Appropriation Act No. 1, 1972* grants certain sums of money for the public service for the financial year ending March 31, 1972.

Chapter 2 (March 29) *Appropriation Act No. 2, 1972* grants certain sums of money for the public service for the financial year ending March 31, 1973.

Chapter 3 (March 29) *An Act respecting the Electoral Boundaries Readjustment Act* changes the name of the electoral district of "Essex" in Ontario to "Essex-Windsor".

Chapter 4 (March 29) *An Act respecting the Electoral Boundaries Readjustment Act* changes the name of the electoral district of "High Park" in Ontario to "High Park-Humber Valley".

Chapter 5 (March 29) *An Act respecting the Electoral Boundaries Readjustment Act* changes the name of the electoral district of "Renfrew North" in Ontario to "Renfrew North-Nipissing East".

Chapter 6 (March 29) *An Act respecting the Electoral Boundaries Readjustment Act* changes the name of the electoral district of "Témiscouata" in Quebec to "Rivière-du-Loup-Témiscouata".

Chapter 7 (March 29) *An Act respecting the Electoral Boundaries Readjustment Act* changes the name of the electoral district of "Trois-Rivières" in Quebec to "Trois-Rivières-Métropolitain".

Chapter 8 (March 29) *The Federal-Provincial Fiscal Arrangements Act, 1972* authorizes payments to provinces respecting revenue equalization, revenue stabilization, tax revenue guarantees, certain corporation income taxes collected on behalf of a province, and post-secondary education adjustments; authorizes income tax collection agreements with the provinces; and extends for an additional five years the hospital insurance program and the special welfare program under the Established Programs (Interim Arrangements) Act.

Chapter 9 (March 29) *An Act to amend the Income Tax Act* permits certain additional deductions from the income tax payable for the 1972 taxation year by individuals and for the 1972 or 1973 taxation year by corporations.

Chapter 10 (May 19) *An Act to amend the Old Age Security Act* reduces the residence requirements of pensioners residing outside Canada; fixes the basic amount of the monthly pension at \$80 per month; increases the maximum amount of the guaranteed income supplement effective January 1, 1972; and provides for an annual adjustment of both amounts to reflect the full amount of any increase in the Consumer Price Index, with no decrease in a year where there is a decrease in the Index.

Chapter 11 (May 19) *An Act respecting the use of the expression "Parliament Hill"* prohibits the use of the words "Parliament Hill" by any person to describe or designate a property, place, site or location other than the area in the city of Ottawa bounded by Wellington Street, the Rideau Canal, the Ottawa River and Bank Street; to identify any goods, merchandise, wares or articles for commercial use or sale; or in association with a commercial service-rendering establishment.

Chapter 12 (May 19) *An Act to amend the Pension Act, the War Veterans Allowances Act, the Civilian War Pensions and Allowances Act, the Children of War Dead (Education Assistance) Act and the Department of Veterans Affairs Act* provides for the annual adjustment of pensions and allowances to reflect any increase in the Consumer Price Index, with no decrease in a year where there is a decrease in the Index.

Chapter 13 (June 15) *The Criminal Law Amendment Act, 1972* makes hijacking of an aircraft and endangering safety of aircraft in flight or rendering it incapable of flight specific offences punishable by life imprisonment, and the taking on board a civil aircraft of an offensive weapon or explosive substance a specific offence punishable by imprisonment for 14 years; and includes a wide range of amendments in existing provisions of the Criminal Code and related amendments to the Criminal Code 1967 Amendment Act, the Criminal Records Act, the National Defence Act, the Parole Act and the Visiting Forces Act.

Chapter 14 (June 30) *An Act to amend the Adult Occupational Training Act* permits any person who has not attended school on a regular basis for any period of at least 12 months since attaining regular school leaving age to be enrolled in an occupational training course; authorizes contracts with an employer or a group or association of employers for an occupational training course for its employees; and provides that a province or an employer may be reimbursed for the cost of providing training. The Act also removes certain eligibility requirements to receive training allowances.

Chapter 15 (June 30) *Appropriation Act No. 3, 1972* grants certain sums of money for the public service for the financial year ending March 31, 1973.

Chapter 16 (June 30) *An Act to amend the Canadian Wheat Board Act* provides that the amount to be paid for wheat is to be determined in respect of a base grade, that the amount payable to a producer for wheat may be fixed so as to reflect quality within a grade, and extends the application of the Act to grains other than wheat.

Chapter 17 (June 30) *The Territorial Supreme Courts Act* changes the name of the Territorial Court of the Yukon Territory to the Supreme Court of the Yukon Territory and the name of the Territorial Court of the Northwest Territories to the Supreme Court of the Northwest Territories.

Chapter 18 (July 7) *An Act to amend the Canada Labour Code* amends the Code respecting industrial relations. It continues the Canada Labour Relations Board, provides for Industrial Inquiry Commissions and conciliation boards and, where provincial and federal legislation are substantially uniform, for an agreement with a province re the administration of provincial legislation. It also provides for such tenure, remuneration and expenses as may be necessary for the carrying out of these provisions.

Chapter 19 (July 7) *An Act to amend the Farm Credit Act* increases the capital of the Corporation to \$66 million; provides that the Corporation may make loans to facilitate the efficient operation of farms to be mortgaged; and extends the basis for determining the appraised value of farm lands to include the productive value of a secondary non-farm enterprise carried on on those lands. The Act limits the individuals, corporations and co-operative farm associations to which the Corporation may make loans to those individuals and those organizations whose shareholders or members are Canadian citizens or landed immigrants; limits to \$100,000 the loan to any farmer alone or jointly with others in a single farming enterprise; and reduces the age at which individuals may be eligible to obtain loans. It also provides for loans with respect to a farming enterprise that forms part of an economic unit, and provides for certain other amendments.

Chapter 20 (July 7) *An Act to amend the Pension Act* permits an increase in the number of Pension Commissioners to 14; and an increase in the number of ad hoc commissioners to ten, each ad hoc commissioner to be appointed for a period not exceeding one year.

Chapter 21 (July 7) *An Act to amend the Representation Commissioner Act* increases the salary of the Commissioner to equal that of a judge of the Federal Court of Canada.

Chapter 22 (July 7) *The St. Lawrence Ports Operations Act* provides for the immediate resumption of the operation of the ports of Montreal, Trois-Rivières and Quebec. The Act prohibits both strikes and lockouts during the term of the collective agreements to which this Act applies, and provides for arbitration of any matters in dispute.

Chapter 23 (September 1) *The West Coast Ports Operations Act* provides for the immediate resumption and continuation of longshoring and grain handling operations and operations relating to longshoring or grain handling at ports on the west coast of Canada. The Act prohibits strikes and lockouts during the term of the collective agreements to which this Act applies and provides for immediate commencement of negotiations to settle any matters in dispute.

Appendix 3

Canadian chronology, 1972

Events in the general chronology from 1497 to 1866 are given in the *1951 Canada Year Book*, pp. 46-49; from 1867 to 1953 in the *1954 Canada Year Book*, pp. 1259-1264; and annually from that year in successive editions. The following listing covers the year 1972; it should be noted that certain of the dates given are approximate. Acknowledgement is given to the publication *Canadian News Facts*, Toronto, for valuable assistance in the preparation of this chronology.

January

Jan. 1, Capital gains tax came into effect under revised income tax legislation passed December 23, 1971. *Jan. 2*, Federal government announced December 22, 1971 as valuation day for calculating future taxable gains on publicly traded stock market shares and December 31, 1971 for other assets to be subject to income tax for the first time under amendments to the Income Tax Act assented to December 23, 1971. *Jan. 5*, Ontario Cabinet reorganized, reducing the number of ministries from 24 to 20 and creating three new policy ministries, expanding the role of the provincial treasurer and establishing a fifth special ministry; ministers heading these five ministries, with the premier as chairman, comprise the Cabinet's Policy and Priorities Committee. *Jan. 6*, Death in Oshawa, Ont., at 100 years of age, of Col. R.W. McLaughlin, founder of the automobile manufacturing plant that was the forerunner of General Motors of Canada Ltd. *Jan. 7*, Geza Matri, a Hungarian immigrant, sentenced to three months in jail and put on two years probation for assaulting Soviet Premier Alexei Kosygin in Ottawa October 18, 1971. *Jan. 9*, Explosion of a nuclear bomb by China. *Jan. 17-29*, Strike of air traffic controllers grounded most commercial flights in Canada; salaries and hours of work were the issues and binding settlement by arbitration was agreed upon; arbitration award of 17.4% increase in salary over 27 months announced March 10. *Jan. 18*, Second report of the Senate Special Committee on Science Policy released; recommendations included formation of a new Crown corporation, Canadian Industrial Laboratories Corporation, to absorb the facilities of the National Research Council and other government departments, adoption of an over-all plan for science and technology, increased spending on research and development, and reappraisal of government-backed scholarship and fellowship schemes to fit industrial needs. Federal government banned seal hunting in the Gulf of St. Lawrence in 1972 by large fleet-sized vessels as well as aircraft; boat operators to be reimbursed for expenditures made for equipment during the season. *Jan. 19*, Minutes and associated documents of the Canadian Cabinet War Committee constituted December 5, 1939 released to the public at the Public Archives; highlights include Canadian refusal of US proposal to assume supreme command of Canadian Forces, Canadian concern over possible violent demonstrations by white Canadians against Japanese Canadians and Prime

Minister W.L. Mackenzie King's stand against conscription. *Jan. 22*, Treaty of Accession signed in Brussels by Prime Minister Heath admitted Britain as a member of the European Economic Community, effective January 1, 1973. *Jan. 24*, Pierre Vallières, *Front de Libération du Québec* leader wanted for seditious conspiracy and counselling to kidnapping and murder, surrendered to police. *Jan. 25*, Injunction restraining a woman from having an abortion issued in Ottawa on behalf of her husband and the "infant plaintiff", the unborn child, said to be the first such action in Canada and perhaps the first in North America. *Jan. 26*, Part One of final report of the LeDain Commission on the non-medical use of drugs released; recommendations included legalization of heroin for drug-addiction treatment in special circumstances (rejected March 29 by federal government as open to abuse) and an immediate search for a chemical to block the effects of amphetamine drugs. *Jan. 29*, Plans to establish on Vancouver Island in September 1973 the United World College of the Pacific, to be patterned after the United World College of the Atlantic established in 1962 at St. Donat's Castle in South Wales and to be a Canadian - US venture, announced jointly by Lester B. Pearson, honorary chairman of the College's Canadian national committee, and Robert L. Houston, committee chairman; head of the governing body to be J.V. Clyne of Vancouver. *Jan. 30*, Pakistan withdrew from the British Commonwealth over moves by other Commonwealth members, including New Zealand and Canada, to recognize Bangladesh, the former province of East Pakistan.

February

Feb. 1, Two-day conference of federal and provincial finance Ministers ended in Jasper, Alta.; discussions centred on the economic outlook for 1972 and the setting up of a contingency plan to deal with unemployment the following winter. *Feb. 1-Mar. 15*, Strike of Quebec hospital dietitians and therapists to protest lagging contract talks and the suspension of ten physiotherapists at a Montreal hospital; ended with acceptance of a temporary salary scale. *Feb. 2*, Canada's application for accreditation as a permanent observer to the Organization of American States approved unanimously by the Permanent Council of the OAS. *Feb. 3-13*, The 1972 Winter Olympic Games held at Sapporo, Japan; silver medal for figure skating won by Karen Magnussen of North Vancouver, BC. *Feb. 5-Mar. 4*, Quebec peace

officers, comprising prison guards, game wardens and others, on strike to back demands for wage parity with federal peace officers, forcing 22 of the province's 35 provincial prisons to close and disrupting the courts. *Feb. 6-Mar. 2*, Airport radar and communications technicians on strike at airports across Canada, tying up commercial air traffic; a new contract agreement gave pay increases of up to 15.1%. *Feb. 7*, Employees of Montreal's daily newspaper *La Presse* returned to work after settlement of a contract dispute that began October 27, 1971. *Feb. 8*, The Canadian Transport Commission rejected applications of the CNR and CPR to discontinue passenger service between Montreal and the Maritime Provinces; federal subsidies to be allowed by the Commission up to 80% of annual losses on uneconomic lines. *Feb. 9*, Formation of the Canadian Telecommunications Carriers Association, representing Canadian telephone companies, railway telecommunications operations, Canadian Overseas Telecommunication Corporation and Telesat Canada. *Feb. 11*, Federal government announced a \$1.7 million program of aid to Canadian book publishing industry, expected to double production of Canadian books, excluding textbooks, within five years; first grants awarded by Canada Council in November for purchase, translation and publication of Canadian books. *Feb. 14*, Canada officially recognized independence of Bangladesh, formerly East Pakistan. *Feb. 16-20*, The 14th meeting of the Canada-US Interparliamentary Group held in Ottawa to discuss foreign ownership policy and the effect on trade of Britain's joining the European Economic Community. *Feb. 21*, Canada formally agreed to accept international verification of the peaceful nature of its nuclear development program, permitting inspection by the International Atomic Energy Agency to verify that nuclear energy has not been diverted from peaceful to military uses. *Feb. 24*, Announcement by Panarctic Oils Ltd. of discovery of crude oil on Ellesmere Island, the first oil strike in the Arctic Islands. *Feb. 25*, Official opening of the \$750 million nuclear power plant of Ontario Hydro at Pickering, the largest single producer of power in the world. *Feb. 28*, Mme Pauline Vanier, widow of former Governor General Georges P. Vanier, left Canada to join her son Jean in work at L'Arche, a community for the mentally retarded near Paris, France.

March

Mar. 2, Plans for new international airport for Metropolitan Toronto, located about 30 miles northeast of the city in Pickering Township, announced by the federal and provincial governments. *Mar. 6*, Governor General Roland Michener presented the Yukon Territory Legislative Council with its first Mace, symbol of the authority of the Speaker of the Legislature. *Mar. 6*, Yves and Carmen Geoffroy, objects of an international search by police following the former's failure to return to St. Vincent de Paul Penitentiary on expiration of his three-day pass, arrested in

Barcelona, Spain, and returned to Montreal March 13. *Mar. 6-11*, Arctic Winter Games held in Whitehorse, YT, with more than 1,000 participants; Yukon Territory came first in points, but Alaska won the greatest share of the medals. *Mar. 7*, Five sq miles on Mount Logan presented to the Northwest Territories by Yukon Territory in compensation for a surveying error were immediately re-presented to Mrs. Michener, wife of the Governor General, for creation of the Norah Willis Michener game preserve. *Mar. 12*, Federal government announced agreement to give control of family allowances to Quebec, subject to certain limits and conditions. *Mar. 15*, Montreal poet Gaston Miron awarded the \$2,000 Canada - Belgium Literary Prize, co-sponsored by the Canadian and Belgian governments and awarded to French-language writers from the two countries. *Mar. 16*, Report of joint Senate-Commons Committee on the Constitution released; recommendations included recognition of the right to self-determination in any part of Canada by democratic means, no change in the monarchical system, restriction of the Senate's veto power over legislation and expansion of its investigatory role, and creation of an autonomous national capital area. *Mar. 22*, Winners of the Governor General's literary awards for 1971 announced by the Canada Council: Pierre Berton (non-fiction in English); Gérard Fortin (non-fiction in French); Mordecai Richler (fiction in English); Gérard Bessette (fiction in French); John Glassco (poetry in English); and Paul-Marie Lapointe (poetry in French). *Mar. 23*, Death of Senator Harry A. Willis of Toronto. *Mar. 24*, General Election held in Newfoundland; results of earlier election held October 28, 1971 were inconclusive; Progressive Conservative party led by Frank Moores defeated Liberal government of Joseph R. Smallwood after 23 years in office; party standings, 33 Progressive Conservative, 9 Liberal. *Mar. 27*, Agreements signed between Canada and France, Britain, Portugal and Denmark for gradual phasing out of their traditional and treaty fishing rights in Canadian waters off the east coast. *Mar. 30*, A naval tradition dating back to 1667 ended for the Canadian navy with the final issue of the daily rum ration.

April

Apr. 3, Announcement of the \$50,000 Royal Bank Award to Dr. Gustave Gingras of the Rehabilitation Institute of Montreal for his work with crippled children and adults. *Apr. 6*, Bomb explosion at the Cuban Trade Commission in Montreal caused extensive damage and killed one person; federal government apologized to the Cuban Ambassador for intrusion of Montreal police on diplomatic property and offered to pay for damages caused by the explosion. A large peninsula on Victoria Island in the Arctic Islands of the Northwest Territories named the Diamond Jenness Peninsula in memory of the distinguished Canadian anthropologist. *Apr. 8*, Death in Seoul, South Korea, while serving with the United Nations Development Program, of

former Saskatchewan Premier Woodrow S. Lloyd, who introduced Canada's first universal medical care insurance program. *Apr. 11*, Paul Joseph Cini of Calgary sentenced to life imprisonment for hijacking an Air Canada jetliner November 12, 1971. *Apr. 11-24*, In the largest strike in Canadian history, about 200,000 Quebec provincial employees, including Hydro-Quebec workers, teachers and hospital workers, left their jobs in support of salary and job security demands; strike ended by emergency legislation and the government instituted court action against unions and persons who ignored injunctions ordering maintenance of essential services; three top strike leaders given one-year jail sentences May 8, and appeals against the sentences were rejected November 13 by Quebec Court of Appeal. *Apr. 12*, Collection of 1,200 illustrations by Canadian artist the late C.W. Jeffreys presented to the Public Archives by Imperial Oil Limited. *Apr. 13-14*, Official visit to Canada of US President Richard M. Nixon and Mrs. Nixon; the President addressed a joint session of Parliament, talks were held with Canadian officials on mutual and international questions, and the Canada - United States Great Lakes Water Quality Agreement was signed. *Apr. 18*, The second annual Michener Award for Journalism for outstanding public service by news organizations in print and broadcasting won by the CBC documentary film *The Tenth Decade*, covering the 1957-68 governments of former Prime Ministers John G. Diefenbaker and Lester B. Pearson. Bangladesh, formerly East Pakistan, admitted to the British Commonwealth. *Apr. 19*, Stricter regulation of boxing matches announced, particularly with regard to contestants' health, following death in Winnipeg February 22 of Stewart Gray, light-heavyweight boxer of Toronto, from injuries suffered in a bout against Canadian champion Al Sparks of Winnipeg. *Apr. 21*, *Apollo XVI* astronauts set up astronomical observatory on moon, the first on another planet. Six-month "sit-in" by Cold Lake, Alta., Indians ended in agreement by federal government to provide \$750,000 for school facilities. *Apr. 24*, Federal government announced a ban on commercial salmon fishing in New Brunswick and the Port aux Basques area of Newfoundland to conserve stocks, effective May 1; more than 900 fishermen to be compensated, amounting to about \$2 million in the current fiscal year. *Apr. 26*, Death in Montreal of Elmer Ferguson, 87, former sportswriter and originator of the Hot Stove League for National Hockey League radio broadcasts. *Apr. 28*, Federal government announced commencement of construction of an all-weather highway to run 1,050 miles from the Alberta - Northwest Territories border to Tuktoyaktuk, NWT. *Apr. 28-July 22*, Union members of 18 building trades in British Columbia locked out by contractors, closing down \$500 million worth of construction as a result of escalated strike action by the plumbers' union; increased wage rates demanded by union negotiators granted by new contract. *Apr. 29*, Presentation of 600 books from the State Central Library in

Bucharest, Romania, to the National Library in Ottawa, one of a series of exchanges celebrating International Book Year; a gift of Canadian publications to be given to the people of Romania in September.

May

May 1, The Supreme Court of Canada ruled that a compulsory breath test for impaired drivers does not constitute a breach of the Canadian Bill of Rights clause concerning self-incrimination. CBC President George Davidson appointed Under-Secretary-General in charge of administration and management and a senior adviser to Secretary-General Kurt Waldheim of the United Nations, effective August 1. *May 2*, Federal government report on foreign investment in Canada released; primary proposal to oversee takeovers of moderate-sized and major Canadian industries by foreigners, such takeovers to be judged on the basis of "significant benefit to Canada". *May 5*, The Quebec Indian Association announced the filing of legal action in Montreal Superior Court to halt the province's proposed James Bay power project, claiming compensation under a 1912 pact in which Canada transferred northern Quebec to the province in return for which the province agreed to protect the interests of the Indians if the area were developed. *May 10*, Canada became the 24th member of the Inter-American Development Bank. *May 11*, Trial in Montreal of Jacques Rose for the October 1970 kidnapping of the late Quebec Minister of Labour Pierre Laporte ended with the jury unable to reach a unanimous verdict. The Stanley Cup won by Boston Bruins over New York Rangers four games to two in National Hockey League playoff competition. *May 17*, Part Two of the LeDain Commission report on the non-medical use of drugs released; recommended that penalties be abolished for simple possession of marijuana and hashish but that these drugs should not be legalized; and that importing and exporting of cannabis be included in the legal definition of trafficking. *May 18*, Death of Frank Hall, 78, Canadian labour leader. *May 22*, Ceylon became an independent social republic, remaining within the Commonwealth, and renamed Sri Lanka. *May 23*, Robert Lemieux, defence lawyer for Jacques Rose, sentenced for contempt of court for refusing to divulge the names of jurors who told him the jury's vote in the trial. *May 24*, Canada's first Olympic Torch Awards presented at the National Arts Centre in Ottawa; Percy Williams of Vancouver, winner of two gold medals at the 1928 Olympics, named outstanding performer; other winners were Barbara Ann Scott King (figure skating), Nancy Greene Raine (skiing), Barbara Wagner Grogan and Bob Paul (pairs figure skating), and team of Jim Day, Jim Elder and Tom Gayford (equestrian performance). *May 24-25*, Official visit to Canada of Secretary-General Kurt Waldheim of the United Nations. *May 28*, Death in Paris of the Duke of Windsor, aged 77. *May 29*, The Quebec govern-

ment banned all commercial salmon fishing off the tip of the Gaspé peninsula, effective June 1, because of declining yield. *May 31*, Prime Minister Trudeau announced establishment of new Canadian awards for bravery and merit for civilians and the Armed Forces, and the addition of a new level to the Order of Canada for contribution to individual communities, professions or other groups.

June

Canadian Council on International Law established to provide a forum for Canadian academics active in public international law and organization and to facilitate closer contact between the academic community and government officials in the field as well as to broaden relations between Canadian international lawyers and interested individuals outside Canada; first meeting held in mid-October in Ottawa. *June 5-6*, UN Conference on the Human Environment, under leadership of Maurice Strong, held in Stockholm; an environmental protection code, to be co-ordinated by a new UN agency, was adopted. *June 8*, Rt. Hon. Lester B. Pearson invested with the Order of Merit by Queen Elizabeth in a ceremony at Buckingham Palace. *June 11*, The 100th anniversary of the birth of Col. John McCrae, composer of the poem *In Flanders Fields* during World War I, celebrated in Guelph, Ont.; tributes received from Queen Elizabeth and Pope Paul. *June 13*, Rt. Hon. Lester B. Pearson awarded the Victor Gollancz humanity award in London, Eng., in recognition of work in the humanitarian field, especially in relation to developing countries. *June 13-Sept. 13*, Strike of steelworkers at Iron Ore Co. of Canada plants at Schefferville, Que. and Labrador City, Nfld.; ended in appointment of commission to investigate the dispute. *June 16*, Official inauguration ceremony of the largest single-site hydro-electric power development in the western world at Churchill Falls, Labrador; attended by Prime Minister Trudeau, Premier Frank Moores of Newfoundland and Premier Robert Bourassa of Quebec. *June 18*, The 113th running of the Queen's Plate at Woodbine, Toronto, won by Victoria Song, owned by Mrs. William Seitz of Toronto. *June 19*, The 2,000-member Canadian Airline Pilots Association joined the International Federation of Airline Pilots Association in a 24-hour strike in protest over hijackings and in support of more stringent international laws. *June 23*, Five-month strike of 2,200 broadcast technicians against the CBC ended with new contract providing for salary increases and guarantees as to job security. *June 29*, A major exhibition of Canadian Eskimo art, presented under the auspices of the Canadian government, opened in the Hermitage Museum in Leningrad, USSR, the largest showing of Canadian sculpture ever shown abroad and the first shown in that country. The Supreme Court of Canada ruled that motorists have the right to consult their lawyers before agreeing to take breath tests to determine the amount of alcohol they have consumed.

July

July 5, Fines totalling \$12,500 levied against the International Longshoremen's Association, its president and three of its business agents for contempt of court in violating provisional injunctions ordering dockers back to work in the Port of Montreal in May. The National Ballet of Canada ended its first European tour after highly acclaimed performances in Monte Carlo, London, Glasgow, Paris, Stuttgart and Lausanne. *July 6*, Agreement announced between Canada and the USSR for broad program of cultural and scientific exchanges, including extended co-operation in Arctic development. *July 7*, Special legislation passed in Parliament ending the seven-week strike of longshoremen in ports on the St. Lawrence River. *July 10*, Fourteen prisoners at the federal maximum security penitentiary at Millhaven, Ont., escaped; the last of the 14 was arrested in Yugoslavia November 17. A total eclipse of the sun was visible in a belt about 100 miles in width across southeastern Canada. *July 12*, Federal government rejected a commercial proposal to establish a \$30 million Village Lake Louise complex in Banff National Park. *July 14*, Donald MacDonald, president of the Canadian Labour Congress, elected the first non-European president of the International Confederation of Free Trade Unions, an association of trade unions in 91 western countries. *July 16*, Death in Bathurst, NB, of Charlie Chamberlain, 61, veteran television, radio and stage performer. *July 17*, Federal government announced the New Horizons program for retired people, to provide money to groups who design their own programs to ease loneliness and isolation but not to provide employment; first grants, totalling \$578,000, announced December 19. Dedication of new St. Boniface, Man., cathedral, built within the walls of the historic structure founded in 1818 and destroyed by fire July 22, 1968. *July 20*, Ronald W. McCracken, Keswick, Ont., awarded the American Library Association Grolier Award for his work in developing libraries in his area, the first Canadian to be so honoured. Federal government increased minimum wages for employees under its jurisdiction from \$1.75 per hour to \$1.90 for employees 17 years and over, and from \$1.50 to \$1.65 for those under 17, effective November 1. *July 24*, Federal government announced plans for a Canada-wide inventory of sources and quantity and nature of emissions of four air pollutants — lead, beryllium, mercury and asbestos — that pose a potential hazard to health. *July 27*, First pictures of Canada received from the US-owned earth resources technology satellite exceeded the expectations of both NASA and the Canada Centre for Remote Sensing; high-altitude photographs will cover every portion of Canada four times a year and provide valuable information about resources, forests, crops, ice and geological formations. *July 28*, A special book containing all first-day-of-issue special covers for Canadian stamps, embossed in gold and showing the Great Seal of Canada and the Mace, together with the

words "House of Commons" and "First Day of Issue" in both languages — the only such collection in the world — to be displayed in the Library of Parliament. *July 31*, Death in Brussels of Paul-Henri Spaak, 73, former Belgian premier and foreign minister, first president of the UN General Assembly and one of the founders of the European Economic Community. Elimination of jail terms for first-time convictions for marijuana possession announced by the federal government.

August

Aug. 2, The Arctic Waters Pollution Prevention Act (RSC 1970, c.2, 1st Supp.) proclaimed; established absolute liability of ship owners and cargo owners for pollution of Arctic waters. *Aug. 3-4*, The 13th annual conference of provincial premiers held in Halifax; topics of discussion included off-shore mineral rights, federal-provincial-municipal relations, and winter employment. *Aug. 6*, Death in Trois-Rivières of Senator Léon Méthot, 77. *Aug. 8*, Following public protest against the appointment of an American as chief of police in Calgary, Charles R. Gain withdrew "because of the intense nationalistic feelings he has experienced". *Aug. 14*, The government of Prince Edward Island named a Royal Commission to investigate land use in the province and the sale of land to non-islanders. *Aug. 15*, Harold Ballard, president of Maple Leaf Gardens, Toronto, convicted of 47 fraud and theft charges involving almost \$205,000 in Gardens funds; sentenced October 20 to three years in penitentiary. *Aug. 17*, Report of the Dennis study on housing, established in 1971 through the Central Mortgage and Housing Corporation, revealed that the six leading developers in ten of Canada's largest cities own at least half and in most cases nearly all the residential land required for development in this decade in each city. Dr. Norman Bethune, internationally known for his medical work in Spain and China, declared by the federal government to be a Canadian of national historic significance; Ontario government unveiled a commemorative plaque at his birthplace in Gravenhurst, September 10. *Aug. 21*, Death in Montreal of A.M. Klein, 64, one of Canada's best-known poets. The Quebec Securities Commission announced new regulations for registering securities salesmen, effective September 1; probationary or temporary registration to be prohibited. Ontario government announced the introduction of five-year licence plates effective in 1973; for an extra \$25 such plates may be "personalized". Newfoundland government announced a special commission or secretariat to investigate files and records of former Premier Joseph R. Smallwood. *Aug. 21-30*, The 24th session of the International Geological Congress, the oldest scientific organization in existence, opened in Montreal, attracting 5,000 geologists from 107 countries. *Aug. 21-Sept. 2*, Canadian Trade Exposition held in Peking, China, the largest trade fair in Canada's history; visited by Premier Chou En-lai, his first visit to a foreign trade fair in China.

Aug. 22-Sept. 10, Exhibition of paintings by the late Emily Carr held at the Commonwealth Institute in London, Eng. *Aug. 24*, Edmonton selected as the site of the 1978 Commonwealth Games. Federal government agreed to admit, on an emergency basis if necessary, Asians holding British passports who were ordered to leave Uganda August 5; by November 8, 4,420 persons had been received as immigrants. *Aug. 30*, General Election held in British Columbia; Social Credit government under Premier W.A.C. Bennett, in power for 20 years, defeated by New Democratic Party led by David Barrett; party standings, 38 New Democratic Party, ten Social Credit, five Liberal and two Progressive Conservative. As a result of about 2,000 Canadians being stranded in Europe and a similar number of Europeans in Montreal with worthless ticket vouchers, the Canadian Transport Commission issued new regulations to ensure that charter trips will be completed. *Aug. 31*, Darcy McKeough resigned as Ontario provincial treasurer because of apparent conflict of interest.

September

Sept. 1, In a special session of Parliament, BC longshoremen, on strike since August 5, were ordered back to work to ensure shipment of record wheat sales to China, Japan and USSR. Thirty-seven persons died and 54 were injured in a fire set by arsonists in the Blue Bird Club in Montreal, the city's worst fire disaster since 1927; three men found criminally responsible October 6, two sentenced December 4 to life imprisonment on conviction for non-capital murder and the third remanded. *Sept. 1-28*, In hockey tournament between Canada and USSR, agreed to April 18, four games played in Montreal, Toronto, Winnipeg and Vancouver; final four games in USSR. Team Canada winning series in final game in Moscow. *Sept. 4*, Theft of paintings and art objects valued at \$2 million from Montreal Museum of Fine Arts, including a Rembrandt valued at \$1 million. *Sept. 5*, Modifications to the Immigration Act allow aliens who had entered Canada as visitors to apply for landed immigrant status; suspended November 3. Announcement of development by a National Research Council engineer and two Queen's University anatomists of a process using electromagnetic radiation to reduce the healing time of open wounds by as much as 100 times. *Sept. 11*, The 20th Olympic Games closed in Munich, Federal Republic of Germany; Canadians won two silver and three bronze medals; event marred September 5 by the killing of 11 Israeli athletes by Arab terrorists. *Sept. 12*, Heritage Canada, an independent national trust, established by the federal government to hold and preserve buildings, natural areas and scenic landscapes for future Canadians. *Sept. 14*, Premier Davis of Ontario announced a series of guidelines to be followed by Cabinet Ministers with regard to possible conflict of interest. *Sept. 15*, Eight-month strike of workers at the DeHavilland Aircraft Co. of Canada Ltd. plant in Toronto ended in a new contract for an average pay

increase of \$1.05 per hour at the end of three years.

Sept. 17, Official opening of Cartier-Brébeuf National Historic Park in Quebec City; established to honour Jacques Cartier, explorer, and Jean de Brébeuf, missionary. *Sept. 20*, Discovery of letter bombs addressed to the Israeli embassy in Ottawa and to the Israeli consulate in Montreal. *Sept. 21-Oct. 23*, Strike of steelworkers at Sydney, NS; ended with grant increasing the basic rate of pay by 33.5%. *Sept. 27*, Federal government announced a ban on the sale of firecrackers to the general public.

October

Oct. 3, The 90th birthday of A.Y. Jackson, only surviving member of the original Group of Seven artists, celebrated by displays and exhibitions of his works. *Oct. 3-10*, Indications reported of gas and oil in the Grand Banks off Newfoundland, off-shore Sable Island near Nova Scotia and on Melville Island in the Arctic. *Oct. 4*, Pierre Vallières, author and a founder of the separatist FLQ, given a one-year suspended sentence on three charges of counselling political kidnappings and ordered to keep the peace, appear before the court upon demand and to meet other conditions. *Oct. 12*, The International Joint Commission reported that more than 90% of the pollution in the Windsor, Ont., district comes from the US, doubling the safety level of concentration of sulphur dioxide and solid particulates in the core area and reducing the quality of Canadian air to well below standards set by Ontario. Nation-wide drug raids by the RCMP and local police, following a six-month investigation by the RCMP, resulted in arrest of more than 100 persons suspected of drug trafficking in Vancouver, Victoria, Toronto, Moncton and Hull. *Oct. 13*, Civil air agreement concluded between Canada and China; direct flights expected to begin early in 1973. A plaque in honour of Poundmaker, plains Cree chief and spokesman for Indian treaty rights during the Second Riel Rebellion, unveiled by his great grandson, Jimmy Poundmaker, on the Poundmaker Indian Reserve near Cut Knife, Sask. *Oct. 20*, The Canadian Transport Commission announced that effective April 1, 1973 transatlantic air charters will be open to anyone who books his seat in advance, provided a deposit is paid, superseding existing "affinity" regulations under which charters could be organized only by clubs or organizations formed for a purpose other than travel and of which travellers must have been members for at least six months. The 12,000 union employees of Ontario Hydro ended 122-day strike with agreement to submit unresolved contract issues to arbitration. *Oct. 27*, The BC Legislature passed legislation guaranteeing \$200 monthly to handicapped and persons over age 65. *Oct. 30*, General Election held in Canada; in the closest vote in Canadian history, party standings were 108 Liberal, 109 Progressive Conservative, 30 New Democratic Party, 15 Social Credit and two Independent, later revised to 109 Liberal, 107 Progressive Conservative, 31 New Democratic Party, 15 Social Credit, one Independent and one no party affiliation.

November

Nov. 3, The Canada Development Corporation announced acceptance of its application for membership in the Canadian Arctic Gas Study Group, composed of 17 Canadian and US companies whose principal concern is completing studies preparatory to the construction of a natural gas pipeline along the Mackenzie River valley. *Nov. 4*, George Harold Campbell, 94, Canada's oldest Olympic gold medallist, died in Orangeville, Ont. *Nov. 6*, Louis Rasminsky announced his resignation as Governor of the Bank of Canada, effective February 1, 1973. *Nov. 7*, Richard Milhaus Nixon re-elected President of the United States. *Nov. 9*, Anik-1, Canada's first domestic communications satellite, to be operated by Telesat Canada, launched at Cape Kennedy, Florida; it will provide for a more reliable telephone service and an expanded radio service in French and English, and bring live television in both languages and in colour to communities in Labrador and north of the Arctic Circle. *Nov. 14*, Official approval announced for construction of the Strategic Automatic Message Switching Operational Network (SAMSON), a computer-controlled message-handling network connecting Canadian Armed Forces bases and posts in Canada and Europe. *Nov. 15*, The Quebec government passed emergency legislation ordering 8,500 striking workers of Hydro-Quebec to maintain essential services. Alberta government passed its own Bill of Rights aimed at "protecting the citizen from the power of the state". *Nov. 16*, Unity Bank of Canada (L'Unité, Banque du Canada) licensed as Canada's tenth chartered bank under federal legislation assented to March 29; head office, Metropolitan Toronto. *Nov. 18*, Death in Montreal of former Senate Speaker Thomas Vien, aged 91. Death in Montreal of Very Rev. James Sutherland Thomson, 80, former Moderator of The United Church of Canada and former dean of divinity at McGill University. *Nov. 20-21*, The first federal-provincial-municipal government conference held in Toronto; agreement that further meetings should be held on a regional level to deal with urban problems in a specific province or group of provinces. *Nov. 22*, Premier Davis of Ontario outlined proposals for re-shaping the mass transit systems of Toronto, Hamilton and Ottawa, using electrically operated trains on elevated tracks. *Nov. 23*, Legislation introduced in the Ontario Legislature to give individuals the right under law to know what information credit agencies have about them and to correct any inaccuracies. *Nov. 24*, Bill introduced in the Quebec National Assembly to provide 13 new electoral enclaves in northern Quebec to enable approximately 1,500 Eskimos, 3,500 Indians and several hundred white persons to vote. George Davidson, former president of the CBC, awarded the Vanier Medal, presented annually by the Institute of Public Administration of Canada for exceptional achievement in public affairs. The Outstanding Achievement Award of the Public Service of Canada for 1972 awarded to R. Gordon Robertson, Clerk of the Privy Council and Secretary to the Cabinet. *Nov. 25*, An armed

man who held an Air Canada hostess hostage for 24 hours in Frankfurt, Federal Republic of Germany, killed by police. *Nov. 29*, Federal government approved a three-phase, \$74 million project to broaden, computerize and eventually automate air traffic surveillance to improve safety and efficiency of air traffic control in southern Canada and help cope with air traffic congestion around large cities. *Nov. 30*, Dr. W.B. Lewis, vice-president of Atomic Energy of Canada Ltd., awarded a "royal medal" by the Royal Society in London for his contributions to the development of heavy water reactors for power generation. Agreement signed by provincial and regional egg producing and marketing authorities to set up the National Farm Products Marketing Council.

December

Dec. 1, Unemployment insurance contribution rate increased for Canadian workers and employers. *Dec. 3*, Death in Toronto of Alan Jarvis, former director of the National Art Gallery. The Hamilton Tiger-Cats won the Grey Cup by defeating the Saskatchewan Roughriders by a score of 13-10 in Canadian professional football playoffs. *Dec. 4*, The federal government announced the provision of \$350 million to the provinces and municipalities for job-producing programs over the next three years; and an additional \$150 million for federal programs. *Dec. 9*, Jacques Rose acquitted in Montreal in second trial for kidnapping the late Quebec Minister of Labour Pierre Laporte. Bush pilot Martin Hartwell, lost on a mercy flight, found alive in Northwest Territories 32 days after crash of his aircraft in which his three passengers died. *Dec. 11*, Apollo astronauts walked on moon in last lunar expedition scheduled for this decade; successful splashdown in Pacific December 19. *Dec. 12-14*, First annual consultative meeting held in Ottawa under the Agreement between Canada and the Federal Republic of Germany on Scientific and Technical Co-operation of April 16, 1971. *Dec. 15*, Federal government recommended a delay in construction of the Mackenzie Highway announced April 28 in order to review possible effects on the ecology. *Dec. 19*, The National Gallery of Canada purchased a 16th century French painting *The Surrender of Milan* by Antoine Caron of the Fontainebleau School. *Dec. 20*, Federal government announced an immediate ban on whaling off the east coast by Canadian ships because of declining stocks. *Dec. 26*, Death in Kansas City, Mo., of Harry S. Truman, 88, former President of the United States. *Dec. 27*, Death in Ottawa of Rt. Hon. Lester B. Pearson, 75, former Prime Minister of Canada.

Appendix 4

Canadian honours

An exclusively Canadian honours system was introduced in 1967 with the establishment of the Order of Canada. The honours system was enlarged in 1972 with the addition of the Order of Military Merit and three decorations to be awarded in recognition of acts of bravery.

The Order of Canada, instituted on July 1, 1967, the 100th anniversary of Confederation, is designed to honour Canadians for outstanding achievement and service to their country or to humanity at large. Originally, two levels of membership were provided: Companions of the Order and recipients of the Medal of Service. The Order was revised in 1972 and now comprises three categories of membership: Companions, Officers – which includes all those who received the Medal of Service – and Members. The latter category is intended especially to recognize service in a locality or in a particular field of activity. Not more than 15 persons may be appointed in any one year as Companions and the total number of Companions is not to exceed 150. Officers of the Order may be appointed to the number of 40 persons a year and up to 80 persons may be appointed yearly as Members of the Order.

All Members of the Order are entitled to have letters placed after their names, as follows: for the Companion CC, for the Officer OC and for the Member CM.

Her Majesty The Queen is Sovereign of the Order and the Governor General holds office as Chancellor and Principal Companion. Appointments to the Order are made, with the approval of the Sovereign, by the Governor General with the assistance of an Advisory Council which meets twice each year under the chairmanship of the Chief Justice of Canada. Members of the Advisory Council include the Clerk of the Privy Council, the Under-Secretary of State, the Chairman of the Canada Council, the President of the Royal Society of Canada, the President of the Association of Universities and Colleges of Canada and not more than two other members who may be appointed by the Governor General from among the present members of the Order.

While Canadians are the primary recipients of the Order, the constitution provides that persons who are not Canadian citizens and whom Canada desires to honour may be appointed as honorary members at any of the three levels of membership.

The Order of Military Merit has been established to provide a means of recognizing conspicuous merit and exceptional service by members of the Canadian Armed Forces, both Regular and Reserves. The Order has three levels of membership: Commander (CMM), Officer (OMM) and Member (MMM).

The Queen is the Sovereign of the Order and the Governor General is the Chancellor as well as being a Commander of the Order. The Chief of the Defence Staff is the Principal Commander of the Order. Appointments to the Order are made by the Governor General on the recommendation of the Minister of National Defence; nominations are made by the Chief of the Defence Staff who is assisted by an advisory committee for the Order.

The number of appointments made annually will vary, depending on the number of nominations submitted and approved. The Order's constitution stipulates, however, that the total number of appointments made annually will not exceed one tenth of one percent of the average strength of the Forces. Members of foreign armed forces who render particularly meritorious service to Canada or the Canadian Armed Forces in the course of their military duties may be made honorary members of the Order at any of the three levels.

Canadian bravery decorations. A Medal of Courage was included in the Order of Canada in 1967 but it was found that a single medal would not serve to recognize in an equitable manner acts of bravery which entail varying degrees of risk. Consequently, no awards were made and the medal has now been superseded by a series of three decorations: the Cross of Valour (CV), the Star of Courage (SC) and the Medal of Bravery (MB). Instances of extraordinary heroism in circumstances of extreme peril will be marked with the award of the Cross of Valour; other outstandingly courageous actions may qualify for the award of the Star of Courage or the Medal of Bravery. The bravery decorations are awarded with the approval of the Sovereign by the Governor General on the advice of the Canadian Decorations Advisory Committee. They may be awarded to civilians, members of the Canadian Armed Forces and of the protective services and may be awarded posthumously.

Order of Canada

Companions **Appointed June 23, 1972**

Dr. Mario Bernardi, CC, D.Mus.

Mlle Marie-Claire Blais, CC

Dr. Balfour W. Currie, CC, FRSC, M.Sc., Ph.D.

Dr. Northrop Frye, CC, MA, DD, LL.D., D.Litt.,
FRSC

Mr. John C. Parkin, CC, FRSA, FRIBA, FRAIC,
RCA, FSIAD

M. Adrien Pouliot, CC, D.Sc., L.ès.Sc., D.Ph., MA,
LL.D., D.ès.L.

The Hon. John P. Robarts, PC, CC, QC, LL.D.,
DCL

Order of Canada (continued)

The following Officers are elevated to Companions:

Révêrend père Clément Cormier, CC, csc, D.Th.
M. le docteur Gustave Gingras, CC, MD, FRSA, LL.D., FRCP(C)
Dr. Chester A. Ronning, CC, MA, B.Sc., LL.D.

Officers Appointed June 23, 1972

Mlle Madeleine Bergeron, OC, BA, B.Sc.Soc.
Mrs. Lily E. Butters, OC
Dr. Thomas W. M. Cameron, OC, MA, Ph.D., D.Sc., FRSC
M. François E. Cleyn, OC, D.Ph.
Lieutenant Robert Côté, OC
Dr. Peter M. Dwyer, OC, LL.D. (*deceased*)
Mr. Frank H. Ellis, OC
The Hon. George A. Frecker, OC, LL.D., D.Paed., FRCGS
Mr. Arthur E. Gelber, OC
M. Roland Giroux, OC
Mr. Foster W. Hewitt, OC
Dr. Herbert H. Jasper, OC, MDCM, M.Sc., Ph.D., FRSC, D.Sc.
Mrs. Gertrude Laing, OC, BA
M. Robert LaPalme, OC
Dr. Isabel MacArthur, OC, B.Sc., MA, D.Educ.
Mr. Maxwell W. Mackenzie, OC, CMG, B.Comm., C.A.
Reverend Father Edmund J. McCorkell, OC, csb, MA, LL.D.
Dr. Katharine McLennan, OC, LL.D.
Mr. Oscar E. Peterson, OC
Mr. Jack L. Shadbolt, OC
Dr. Chester Bryant Stewart, OC, MDCM, CD, B.Sc., FAPHA, DPH
Miss Teresa Stratas, OC
Sister Catherine Wallace, OC, sc, MA, Ph.D., DCL, LL.D.
Mr. Daniel A. Yanofsky, OC, B.Sc., LL.B., BCL
Dr. Ayala Zacks, OC, LL.D.

Companions Appointed December 22, 1972

L'hon. Fernand Choquette, CC, LL.L., CR
The Hon. John Valentine Clyne, CC, BA, K.St.J.
Dr. George F. Davidson, CC, MA, Ph.D., LL.D., LHD
Dr. Robertson Davies, CC, B.Litt., DCL, FRSC
Air Chief Marshal Frank R. Miller, CC, CBE, CD, B.Sc., LL.D.
M. Marcel Vincent, CC, M.Comm., D.Ph.

Officers Appointed December 22, 1972

Dr. John Milton Bell, OC, B.Sc.A., M.Sc., Ph.D., FAIC
Dr. Roloff Wilfrid Beny, OC, MA, LL.D.
The Hon. Douglas Lloyd Campbell, OC, LL.D.
Dr. Charles F. Comfort, OC, CD, LL.D., RCA
M. Camille A. Dagenais, OC, B.Sc.A.
Dr. Jean F. Davey, OC, OBE, BA, MD, FRCP(C), FACP
Mr. Phil Esposito, OC

Mgr Paul-Emile Gosselin, OC, p.d., D.Ph.
Dr. Harry B. Hawthorn, OC, M.Sc., Ph.D., FRSC
Dr. James A. Houston, OC, D.Litt., LL.D.
Dr. Richard D. Jones, OC, MA, BST, LL.D.
The Right Rev. Msgr. Dr. Basil Kushnir, OC, D.D.
Dr. John Francis Leddy, OC, MA, D.Phil., D.Litt., D.ès.L., LL.D., DCL, FR.Hist.S.
M. le docteur Jean-Jacques Lussier, OC, MD, M.Sc., D.Ph.
Mr. Albert Martin, OC, CD
Dr. Donald MacDonald, OC, LL.D.
Dr. Louis Boyd Neel, OC, CBE, MA, MRCS, LRCP, Hon. RAM
Dr. Arthur Charles Neish, OC
Miss Betty Oliphant, OC, FISTD (CSB, SB)
Mr. I. Norman Smith, OC
M. Alfred Tremblay, OC

Members Appointed December 22, 1972

Mr. William Adkins, CM
Dr. Elizabeth Bagshaw, CM, MD
Mlle Jocelyne Bourassa, CM, B.Sc.
Mr. Douglas Bremner, CM, B.Sc., P.Eng., MEIC
Révêrend père Gaston Carrière, CM, OMI, L.Ph., L.Th., D.Ph.
Mr. Sam Crow, CM
Mr. Nicholas R. de Grandmaison, CM, ARCA
Révêrend père Marcel de la Sablonnière, CM, s.j. BA
Professor Colin D. diCenzo, CM, CD, DIC, M.Sc. P.Eng.
Mr. George Michael Flood, CM
Soeur Alice Gervais, CM, MA
Dr. M. David Graham, CM, MDCM, BA, CD
Dr. Hilda Alice Hellaby, CM, L.Th., DD, D.Th.
Mr. William Donald Hurst, CM, B.Sc., MEIC
M. L'abbé Pierre Hurteau, CM, MSW, L.Péd.
Mrs. Jane L. Hutchings, CM, RN
Mrs. Mary Adelaide Jennings, CM
Dr. Herman Smith Johannsen, CM, LL.D.
Mr. James G. Kettles, CM
Mrs. Mabel E. Krug, CM
M. Jean-Louis Lagassé, CM, BA, LL.B.
M. le professeur Georges Maheux, CM, MA, M.Sc., L.Sc., D.Sc., D.Sc.For., SRC
Son Honneur M. Roger Malaisson, CM
M. Guy Mauffette, CM
Mme Nicole-Henriette Mongeau, CM
Reverend Father James J. Morelli, CM, BA
Mrs. Phyllis B. Munday, CM, RN
Dr. Bertram Reid MacKay, CM, B.Sc., Ph.D., FRSC, FGSA, FRCGS
Dr. C. Lamont MacMillan, CM, MDCM
Dr. Stanley H. McCuaig, CM, QC, LL.D.
Son Honneur M. Adrien Ouellette, CM
Major Elizabeth Peacocke, CM
Mr. Reynold Pehkonen, CM
M. Robert Prévost, CM
Mr. J. Howard Richardson, CM
Dr. Kathleen Rowan-Legg, CM, LL.D.
Mrs. Polly Sargent, CM
Colonel Frank J. Storey, CM, ED
M. Joseph Arthur A. Villeneuve, CM
Mr. Donald Wetmore, CM, MA

Order of Military Merit**Effective Dec. 13, 1972****Commander**

Rear-Admiral John Alexander Charles, CMM, CD
 Lieutenant-General Michael Reginald Dare, CMM, DSO, CD
 Major-General William Arnold Howard, CMM, CD
 Major-General Norman Lawrence Magnusson, CMM, DSC, CD
 Lieutenant-général Gilles Antoine Turcot, CMM, CD

Officer

Captain Lawrence Campbell Bowen, OMM
 Capitaine Joseph Jean Armand Marcel Brière, OMM, CD
 Lieutenant-Colonel Borden Ross Campbell, OMM, CD
 Lieutenant-Colonel Richard Gerald Arthur Clare, OMM, CD
 Lieutenant-Colonel Colin MacDonald Curleigh, OMM, CD
 Captain William Thomas Floyd, OMM, CD
 Colonel James Andrew Fulton, OMM, CD
 Captain Beatty Peever Hill, OMM, CD
 Captain Arlan Keith Hird, OMM, CD
 Major Donald Bateman Hope, OMM, CD
 Major Paul Frederick Hope, OMM, CD
 Capitaine Joseph Emile Landry, OMM
 Major Archibald Fraser Leith, OMM, CD
 Lieutenant-colonel Joseph Ernest John Albert Lévis, OMM, CD
 Major Owen Kenneth Ruthven MacLean, OMM, CD
 Captain Thomas Marshall, OMM, CD
 Major Thomas Stephen Martin, OMM, CD
 Captain Desmond Allan Price, OMM, CD
 Major Joseph Alfred Jean Spénard, OMM, CD
 Captain Edna Ruth Stokes, OMM, CD
 Colonel Gérard Charles Édouard Thériault, OMM, CD

Member

Master Warrant Officer Clifford Forbes Baker, MMM, CD
 Chief Warrant Officer John Hugh Barben, MMM, CD
 Adjutant Joseph Jacques Yvon Bélanger, MMM, CD
 Chief Warrant Officer Bernard William Bell, MMM, CD
 Soldat Raymond Lucien Bernier, MMM
 Sergeant Joseph Marcel Jean Pierre Blanchet, MMM
 Sergeant Kenneth George Bradley, MMM, CD
 Master Warrant Officer Rupert Denis Brown, MMM, CD
 Corporal Roland George Callacott, MMM, CD
 Corporal Douglas Cavener, MMM, CD
 Master Warrant Officer Howard Clark, MMM, CD
 Corporal Dave Arnold Claxton, MMM
 Sergeant Patrick Charles Condon, MMM

Adjutant-chef Achille Gérard Couillard, MMM, CD
 Sergeant Joseph Éloi Daigle, MMM, CD
 Master Warrant Officer Alexander Baillie Davidson, MMM, CD
 Chief Warrant Officer William Arden Doncaster, MMM, CD
 Sergeant Anthony John Dungale, MMM, CD
 Master Warrant Officer Patrick Dunleavy, MMM, CD
 Chief Warrant Officer Andrew Nelson Eisner, MMM, CD
 Warrant Officer William Daniel Elliott, MMM, CD
 Private William Leon Elliott, MMM
 Chief Warrant Officer William Proctor Elms, MMM, CD
 Warrant Officer Koel Ernest Fischer, MMM, CD
 Sergeant Philip David Foley, MMM, CD
 Warrant Officer Bruce Eugene Fretts, MMM, CD
 Sergeant Ross Ronald Grist, MMM, CD
 Adjutant Joseph Isaie Hache, MMM, CD
 Chief Warrant Officer James Duncan Holland, MMM, CD
 Sergeant Donald Robert Hogg, MMM, CD
 Lieutenant Donald Ralph Johnson, MMM
 Master Warrant Officer Hubert Reginald Johnson, MMM, CD
 Captain David Barry Jones, MMM, CD
 Master Corporal William Joseph King, MMM, CD
 Chief Warrant Officer Francis Eugene Knight, MMM, CD
 Sergeant Edward Kenneth Koenig, MMM, CD
 Adjutant-mâitre Joseph Henri Laporte, MMM, CD
 Warrant Officer Keith Ernest Lathey, MMM, CD
 Sergeant Arnold Siméon Leblanc, MMM, CD
 Adjutant Joseph Raymond LeCavalier, MMM, CD
 Adjutant-mâitre Joseph Gabriel Albert Lefebvre, MMM, CD
 Master Corporal Lloyd Douglas Lockhard, MMM, CD
 Adjutant-mâitre Joseph Roméo Claude Loiseau, MMM, CD
 Corporal Reginald Lloyd Mailloux, MMM
 Sergeant Joseph Armand Ovide Antoine Martel, MMM, CD
 Warrant Officer Walter James Martens, MMM, CD
 Master Warrant Officer Henry McCabe, MMM, CD
 Master Warrant Officer Phyllis Mary McDougall, MMM, CD
 Sergeant Joseph Edmond Jean Yves Michaud, MMM, CD
 Captain Ernest Leon Moffat, MMM
 Warrant Officer Thomas Charles Montgomery, MMM, CD
 Sergeant James Neilson, MMM, CD
 Sergeant Daniel Norgaard, MMM, CD
 Master Corporal Ronald Albert Peskett, MMM
 Sergeant Wilfred Roger Riendeau, MMM, CD
 Master Corporal Gerald Richard Scorgie, MMM, CD

Order of Military Merit (concluded)

Master Corporal Robert Sidney Shaw, MMM
 Chief Warrant Officer Samuel Henry Shaw,
 MMM, CD
 Master Corporal Noel Alfred Shepherd, MMM,
 CD
 Warrant Officer Robert Donald George Simpson,
 MMM, CD
 Sergeant Donald Wesley Smith, MMM, CD
 Warrant Officer Kenneth Alexander Smith, MMM,
 CD
 Corporal William Ernest Somers, MMM, CD
 Master Warrant Officer Stanley James Stephenson,
 MMM, CD
 Master Corporal James Harry Stover, MMM
 Chief Warrant Officer William Bassil Tkachuk,
 MMM, CD

Bravery decorations

Cross of Valour	Date of Appointment
Chief Warrant Officer Vaino Olavi Partanen (<i>posthumous</i>)	July 20, 1972
Sergeant Lewis John Stringer (<i>posthumous</i>)	July 20, 1972

Star of Courage	
Élève-officier Clément Léo Bussière	July 20, 1972
Warrant Officer Robert Laverne Clark	Aug. 24, 1972
William Cowper, Jr.	Oct. 19, 1972
Ernest Edwards	Aug. 24, 1972
Blair Garnett (<i>posthumous</i>)	Aug. 24, 1972
Robert Goudie	July 20, 1972
Sidney Harris (<i>posthumous</i>)	Oct. 19, 1972
James Davidson Hay	Aug. 24, 1972
Frank R. Noble (<i>posthumous</i>)	Aug. 24, 1972
Michael Papirny	Oct. 19, 1972
Edward Pruss	Aug. 24, 1972
Louis Raczy	July 20, 1972
Sub-Lieutenant Clark E. Reiffenstein (<i>deceased</i>)	July 20, 1972

G. Winder Smith (<i>deceased</i>)	Aug. 24, 1972
Richard Balfour Swanson	Aug. 24, 1972

Medal of Bravery

Christopher Patrick Amos	Oct. 19, 1972
Constable Stanley Blackstock	Aug. 24, 1972
Sergeant Joseph John Daniel Bouchard	Aug. 24, 1972
Gaudias Brousseau	July 20, 1972
Theresa Buchanan	Oct. 19, 1972
James Crane	Oct. 19, 1972
Clary Alden Croft	Aug. 24, 1972
Captain Roger D'Arcy	Aug. 24, 1972
Charles Duncan	Aug. 24, 1972
Keith Duncan	Aug. 24, 1972
Paul Edwards	Aug. 24, 1972
Thomas Douglas Fletcher	Aug. 24, 1972
Rupert Fong	Oct. 19, 1972
James Foster	Oct. 19, 1972
Master Warrant Officer Robert G. George	July 20, 1972
Warrant Officer Gerald J. Gillingham	July 20, 1972
Herman Girard	July 20, 1972
Johnson Gock	Oct. 19, 1972
Tony Guimond	July 20, 1972
Niles Gurnsey	Oct. 19, 1972
Corporal Robert Lester Harris	July 20, 1972
H. Robert Hoffman	July 20, 1972
Dr. D. Keith Hurst	July 20, 1972
Norton Walter Irwin	Aug. 30, 1972
Raymond Kellerman	July 20, 1972
Peter Kuystermans (<i>posthumous</i>)	Oct. 19, 1972
Gyuala Lakatar	Oct. 19, 1972
Stanley V. Loutit	July 20, 1972
Michael Maloney (<i>posthumous</i>)	Aug. 24, 1972
Fred Maxfield	July 20, 1972
Ruth McWilliams (now Mrs. T.J. Hewitt)	July 20, 1972
Paul Mraz (<i>posthumous</i>)	Oct. 19, 1972
Ronald Page	Oct. 19, 1972
Corporal Gordon William Rowe	Oct. 19, 1972
James G. Scarlett	July 20, 1972
Charles Simard	July 20, 1972
Lewis Owen Skidmore	Aug. 24, 1972
Major John A.S. Walker	Aug. 24, 1972
Siegfried Wolf (<i>German citizen</i>)	Oct. 19, 1972

Appendix 5

Books about Canada

This basic list of books about Canada, contributed by the National Library of Canada, includes a selection of publications grouped alphabetically by author and arranged under the subject classifications of The Arts and the Performing Arts, Biography, Country and People, Economics, Government and Politics, History, Literature, General Reference Works and Science. The brief list of science books was contributed by the National Science Library (NRC). Titles are listed in the language in which they are published. The selection emphasizes books which have been received during the past year establishing a new pattern for this and future editions of the *Canada Year Book* in contrast to the practice in previous years of providing a list covering a three- to five-year period. This list is limited to about 200 titles. For additional titles, the reader should consult the lists of books in earlier editions of the *Canada Year Book* or the monthly or annual editions of *Canadiana*, the national bibliography, published by the National Library.

The arts and the performing arts

Arthur, Eric and Dudley Witney. *The barn; a vanishing landmark in North America*. Toronto, McClelland and Stewart, 1972. 256 p.

Book Promotion and Editorial Club. *The look of books, 1972; twenty-eight books chosen as the outstanding examples of Canadian book design and production*. Toronto, 1972. 40 p.

Burnham, Harold B. and Dorothy K. Burnham. *Keep me warm one night: early handweaving in eastern Canada*. Toronto, University of Toronto Press in co-operation with the Royal Ontario Museum, 1972. 387 p.

Creative Canada; a biographical dictionary of twentieth century creative and performing artists. Toronto, published in association with McPherson Library, University of Victoria, by University of Toronto Press, 1971-1972. 2 vols.

Dow, Helen J. *The art of Alex Colville*. Toronto, McGraw-Hill Ryerson, 1972. 231 p.

Gundy, H. Pearson. *The spread of printing: Canada*. London, Routledge and Kegan Paul, 1972. Vol. 1 (Spread of printing series, 1).

Lessard, Michel et Huguette Marquis. *Encyclopédie de la maison québécoise, trois siècles d'habitations*. Montréal, Éditions de l'Homme, 1972. 727 p.

Lessard, Michel et Huguette Marquis. *Encyclopédie des antiquités du Québec, trois siècles de production artisanale*. Montréal, Éditions de l'Homme, 1971. 526 p.

Morris, Jerrold. *The nude in Canadian painting*. Toronto, New Press, 1972. 89 p.

New, William H. *Dramatists in Canada; selected essays*. Vancouver, University of British Columbia Press, 1972. 204 p.

Robert, Guy. *Borduas*. Montréal, Presses de l'Université du Québec, 1972. 340 p.

Such, Peter. *Soundprints; contemporary composers*. Toronto, Clarke, Irwin, 1972. 171 p.

Swinton, George. *Sculpture of the Eskimo*. Toronto, McClelland and Stewart, 1972. 255 p.

Trudel, Jean. *Un chef-d'oeuvre de l'art ancien du Québec: la chapelle des Ursulines*. Québec, Presses de l'Université Laval, 1972. 115 p.

Unitt, Doris J. and Peter Unitt. *Bottles in Canada*. Peterborough, Ont., Clock House, 1972. 240 p.

Withrow, William. *Contemporary Canadian painting*. Toronto, McClelland and Stewart, 1972. 223 p.

Biography

Anahareo. *Devil in deerskins, my life with Grey Owl*. Toronto, New Press, 1972. 190 p.

Bertrand, Lionel. *Mémoires de l'honorable Lionel Bertrand*. Montréal, Éditions du Jour, 1972. 290 p.

Casgrain, Thérèse-F. *Une femme chez les hommes*. Montréal, Éditions du Jour, 1971. 296 p.

Casgrain, Thérèse-F. *A woman in a man's world*. Toronto, McClelland and Stewart, 1972. 192 p.

Dempsey, Hugh A. *Crowfoot: Chief of the Blackfeet*. Edmonton, Hurtig, 1972. 226 p.

Grahame, Gordon H. *Short days ago*. Toronto, Macmillan, 1972. 218 p.

The autobiography of the author of many adventure novels including *Larry* and *The bond triumphant*, telling of his life from 1889 to 1918.

Haliburton, E.D. *My years with Stanfield*. Windsor, NS, Lancelot, 1972. 116 p.

- Heeney, Arnold D.P. *The things that are Caesar's; memoirs of a Canadian public servant*. Toronto, University of Toronto Press, 1972. 218 p.
- Henderson, Dorothy M. *Robert McLaughlin - carriage builder*. Toronto, Griffin, 1972. 70 p.
- Jackman, Sydney W. *The men at Cary Castle; a series of portrait sketches of the Lieutenant-Governors of British Columbia from 1871 to 1971*. Victoria, BC, Morriss Printing, 1972. 207 p.
- Jackson, William G.F. *Alexander of Tunis as military commander*. New York, Dodd Mead, 1972. 344 p.
- Johnston, William V. *Before the age of miracles: memoirs of a country doctor*. Toronto, Fitzhenry and Whiteside, 1972. 212 p.
- Keith, Ronald A. *Bush pilot with a briefcase: the happy-go-lucky story of Grant McConachie*. Toronto, Doubleday, 1972. 322 p.
- Masson, Henri. *Joseph Masson, dernier seigneur de Terrebonne, 1791-1847*. Montréal, L'auteur, 1972. 354 p.
- Morison, Samuel E. *Samuel de Champlain: Father of New France*. Toronto, Little Brown, 1972. 299 p.
- Nuligak. *Mémoires d'un Esquimaux; la vie de Nuligak*. Traduit de l'esquimaux par Maurice Métayer. Montréal, Éditions du Jour, 1972. 191 p.
- Pearson, Lester B. *Mike: 1897-1948*. Toronto, University of Toronto Press, 1972. 301 p.
Vol. 1 of the three-volume work entitled, *The memoirs of the Right Honourable Lester B. Pearson*.
- Pitsoolak. *Le livre d'images de ma vie*. Tiré des interviews enregistrées par Dorothy Eber. Texte français de Claire Martin. Montréal, Cercle du Livre de France, 1972. u.p.
- Redsky, James. *Great leader of the Ojibway: Mis-quona-queb*. Toronto, McClelland and Stewart, 1972. 127 p.
- Speaight, Robert. *Georges P. Vanier, soldat, diplomate et gouverneur général*. Montréal, Fides, 1972. 530 p.
- Taylor, A.J.P. *Beaverbrook*. Toronto, Nelson, 1972. 712 p.
- Tremblay, Gilberte. *Bernier, capitaine à 17 ans*. Montréal, Leméac, 1972. 119 p.

Country and people

- About, Jacques, Michel Duplat et al. *Petit guide des Jeux olympiques*. Montréal, Éditions de l'Homme, 1972. 151 p.
- Blyth, Jack A. *The Canadian social inheritance*. Toronto, Copp Clark, 1972. 408 p.
- Bruemmer, Fred. *Encounters with Arctic animals*. Toronto, McGraw-Hill Ryerson, 1972. 256 p.
- Burnet, Jean R. *Ethnic groups in Upper Canada*. Toronto, Ontario Historical Society, 1972. 129 p. (Ontario Historical Society. Research Publication, no. 1)
- Burton, A.P. *The horn and the beanstalk; problems and possibilities in Canadian education*. Toronto, Holt, Rinehart and Winston, 1972. 129 p.
- De Volpi, Charles P. *Newfoundland, a pictorial record*. Toronto, Longmans, 1972. 181 p.
- Finnigan, Bryan and Cy Gonick, comps. *Making it: the Canadian dream*. Toronto, McClelland and Stewart, 1972. 597 p.
Canadian sociologists discussing problems such as underprivilege and pollution in a Canadian context and in the light of the rapid changes occurring in the political, social and economic structure during the last few years.
- Fleming, William G. *Education: Ontario's preoccupation*. Toronto, University of Toronto Press, 1972. 330 p.
- Gibson, John Frederic. *A small and charming world*. Toronto, Collins, 1972. 220 p.
Creative interpretation of the harmonies and values of the Indians of the Queen Charlotte Islands and the Skeena River.
- Godbout, Arthur. *L'origine des écoles françaises dans l'Ontario*. Ottawa, Éditions de l'Université d'Ottawa, 1972. 183 p.
- Gotlieb, Sondra. *The gourmet's Canada*. Toronto, New Press, 1972. 290 p.
- Grand'Maison, Jacques. *Nouveaux modèles sociaux et développement*. Montréal, Hurtubise HMH, 1972. 491 p.
- Gray, James H. *Booze, the impact of whiskey on the Prairie West*. Toronto, Macmillan, 1972. 243 p.
- Hancock, Lyn. *There's a seal in my sleeping bag*. Toronto, Collins, 1972. 292 p.
The Hancocks run the Wild Life Conservation Center in Saanichton, BC and this is the story of their conservation activities with seals and bald eagles along the west coast.

- Hawkins, Freda. *Canada and immigration: public policy and public concern*. Montreal, McGill-Queen's University Press, 1972. 444 p.
- Hébert, André. *Alpinisme au Québec*. Montréal, Éditions du Jour, 1972. 187 p.
- Keating, Kathleen. *Justice*. Toronto, McGraw-Hill Ryerson, 1972. 78 p.
- Knap, Jerome J. *The Canadian hunter's handbook: a complete guide to hunting in Canada*. Don Mills, Ont., Greywood, 1972. 192 p.
- Lawrence, R.D. *Maple sugar*. Toronto, Nelson, 1972. 74 p.
- Lazure, Jacques. *La société des jeunes québécois*. Montréal, Presses de l'Université du Québec, 1972. 204 p.
- Lowry, David R. *Blind rights: an examination of the law relating to the blind in Canada with particular reference to Nova Scotia*. Halifax, Blind Rights Action Movement, 1972. 104 p.
- Ludwig, Jack. *Hockey night in Moscow*. Toronto, McClelland and Stewart, 1972. 184 p.
- McGill University. *The university and society*. Montreal, McGill-Queen's University Press, 1972. 89 p.
- Maillet, Antonine. *Rabelais et les traditions populaires en Acadie*. Québec, Presses de l'Université Laval, 1971. 201 p. (Les Archives de folklore, 13)
- Ostry, Sylvia, ed. *Canadian higher education in the seventies*. Ottawa, Information Canada, 1972. 310 p.
- Ouellet, Fernand. *Éléments d'histoire sociale du Bas-Canada*. Montréal, Hurtubise HMH, 1972. 379 p. (Les Cahiers du Québec, 5)
- Patterson, Palmer. *The Canadian Indian; a history since 1500*. Don Mills, Ont., Collier-Macmillan, 1972. 210 p.
- Peel, Bruce. *Steamboats on the Saskatchewan*. Saskatoon, Western Producer, 1972. 238 p.
- Pennier, Henry. *Chiefly Indian; the warm and witty story of a British Columbia logger*. Vancouver, Graydonald Graphics, 1972. 130 p.
- Pineau, Jean. *La famille*. Montréal, Presses de l'Université de Montréal, 1972. 365 p.
- Renaud, André. *Education and the first Canadians*. Toronto, Gage, 1971. 72 p. (Quance lectures in Canadian education, 1971)
- Richardson, Boyce. *Baie James; sans mobile légitime*. Montréal, L'Étincelle, 1972. 165 p.
- Richardson, Boyce. *James Bay; the plot to drown the north woods*. Toronto, Clarke, Irwin, 1972. 160 p.
- Rose, T.F. *From shaman to modern medicine: a century of the healing arts in British Columbia*. Vancouver, Mitchell, 1972. 187 p.
- Séguin, Robert L. et al. *Ethnologie québécoise*. Montréal, Hurtubise HMH, 1972. Vol. 1.
- Stevenson, Frederik. *Notice: this is an Indian reserve*. Photography by Frederik Stevenson. Some words by Sheila Erickson. Edited by Kent Gooderham. Toronto, Griffin House, 1972. 83 p.
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Appendix 6

Government information services

Information Canada was established in April 1970 to act as a central source for the public seeking information on federal government policies, programs and services; to co-ordinate federal information programs involving more than one department and help other federal agencies improve the quality and effectiveness of their information work, through the provision of professional personnel and resource assistance when so requested; to maintain marketing and distribution facilities for all federal publications and to initiate information programs where the public need is clearly identified and the responsibility does not fall under any one specific department.

The agency now operates regional inquiry centres in six major cities across Canada and plans to open five more, thus creating a coast-to-coast network. These centres are gradually branching out beyond the urban areas through the use of mobile information officers.

When it was created, Information Canada took over the publishing and bookselling functions of the Queen's Printer. In addition to operating its own bookstores, it is developing a network of authorized agencies, using qualified commercial booksellers for the sale of Canadian Government publications throughout Canada.

The agency is also responsible for the former Canadian Government Exhibition Commission, now the Information Canada Audio-Visual/Expositions Branch, and the former Still Photo Division of the National Film Board, now Information Canada Photothèque.

Federal government information services are not centralized in Information Canada. The information resources of the various departments are at the service of the public to answer inquiries about their specific activities, while Information Canada acts as a central contact point.

Information Canada reports to Parliament through the Minister of Labour.

Statistics Canada, established in 1918 as the Dominion Bureau of Statistics, is Canada's central statistical agency and as such is the country's main collector and publisher of information about Canadian economic and social life. The agency, given its present name in 1971, has been a separate department of government since 1965 and reports to Parliament through the Minister of Industry, Trade and Commerce.

One of Statistics Canada's key jobs is conducting the Census of Canada at five- and ten-year intervals; the latest ten-year Census was in 1971 and the next five-year Census will be in 1976. The bureau also undertakes a comprehensive Census of Agriculture at the same time as the general censuses and regularly surveys social and economic change under more than 20 broad subject-matter headings such as the monthly labour force and consumer prices surveys.

The growth of Statistics Canada, both in personnel and in the complexity of statistical activity, has paralleled Canada's development as a modern industrial state. The agency's staff, which includes the largest single body of social scientists in one organization in Canada, has more than doubled in the past 15 years to about 4,000 in 1973. Several hundred additional persons are employed part-time on such projects as special surveys and censuses.

Statistical collection by the bureau covers every area of Canada and ranges from the well-known national assessments such as the national accounts to minute census detail. The information produced describes quantitatively Canada's economic and social environment and is used mainly as an aid to decision-making and research. The public sector uses the information for the development of social and economic policies and the private sector uses it extensively for decisions in marketing and merchandising and the establishment of branch plants and retail outlets.

Most Statistics Canada information is made available to the public through publications but for more sophisticated users there is an increasing output on micro-film, computer tapes and special tabulations. In the most recent count, there were more than 1,100 publications. Of these, some appear monthly or more frequently, some quarterly, some annually, and others every two or three years. The publications flowing from the national censuses include 278 for 1961, 122 for 1966 and more than 300 based on the 1971 Census. Some general publications are issued occasionally and include special studies and manuals. Statistical reports are increasingly published in bilingual form or appear in separate English and French editions. About 1.3 million copies of Statistics Canada publications are issued yearly on a subscription basis.

Geocoding, known formally as the Geographically Referenced Data Storage and Retrieval System (GRDSR), is one example of the sophisticated tools the bureau uses for processing data and providing statistical information. Through GRDSR, certain statistical information can now be quickly and inexpensively obtained about areas as small as a few city blocks in major cities.

Another example of Statistics Canada's capability for the storage and speedy processing of information is the Canadian Socio-economic Information Management System (CANSIM). CANSIM stores and updates hundreds of series of information on such topics as prices, industrial production, trade, and national accounts. Most series cover statistics for several years. Information tailored to user requirements is provided on computer tapes or in table form.

The publications program includes the statistical information from each subject area that is most commonly used. Special tabulations are issued in response to requests for more detail.

In addition to the publications program, there is considerable distribution of statistical information through newspapers, magazines, trade journals, trade associations and radio and television broadcasts. Much of Statistics Canada material is used in a wide range of reference publications such as year books and encyclopedias and is incorporated into research studies, books, learned journals and in a great variety of other public and private documents.

The principal vehicle for informing the public about the bureau's output is the free Catalogue of publications, issued annually. It can be obtained by writing to Publications Distribution, Statistics Canada, Ottawa K1A 0T6. The Catalogue lists and describes all publications, grouped by subject areas. A commodity index lists several thousand entries arranged in alphabetical order and cross-referenced where necessary to show several publications in which information on a given subject may be found.

Statistics Canada publications may be obtained from the bureau headquarters, by using the order form supplied with the Catalogue, and through regional offices at St. John's, Halifax, Montreal, Ottawa, Toronto, Winnipeg, Edmonton, and Vancouver. Frequently used publications are stocked in Information Canada bookstores in principal cities. Major public and university libraries, provincial libraries and the National Library at Ottawa have Statistics Canada publications available for reference and the Statistics Canada library in Ottawa has all publications issued since the bureau was established.

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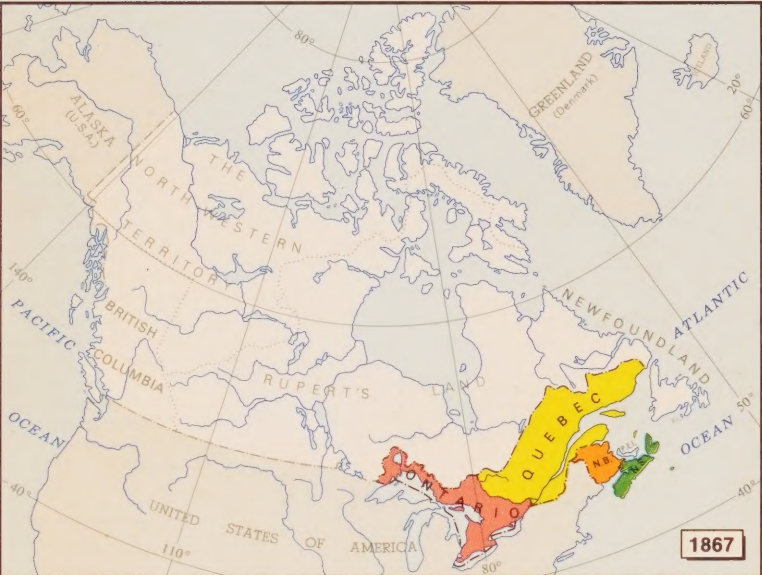
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Territorial evolution of Canada (continued from front end leaf)



New Brunswick, Nova Scotia and Canada are united in a federal state, the Dominion of Canada, by the British North America Act (July 1, 1867). The Province of Canada is divided into Ontario and Quebec. The United States of America proclaims the purchase of Alaska from Russia (June 20).



The North-West Territories (Rupert's Land and the Hudson's Bay Company (1870). From part of them Manitoba is created as the sixth province (1870).



The Ontario-Manitoba boundary dispute is settled by the Ontario Boundary Act (1889). The District of Yukon becomes a Territory separate from the North-West Territories (1898). Alberta and Saskatchewan are created as provinces to make a total of nine provinces in the Dominion of Canada (1905). The District of Keewatin is transferred back to the Northwest Territories. Due to changes in adjoining areas the boundaries of the Northwest Territories are redefined (1906).



Ontario and Manitoba attain their present boundaries (1905). The Northwest Territories are extended northward to Hudson Bay and Hudson Strait. The District of Keewatin is transferred back to the Northwest Territories. Due to changes in adjoining areas the boundaries of the Northwest Territories are redefined (1906).



1873

in Territory) are acquired by Canada from the Hud-
son's Bay Company (1870). British Columbia joins
the Confederation as the seventh province (1873).



1882

New provisional northern and western boundaries of Ontario are described (1874). The District of Keewatin is created (1876). British rights to the arctic islands pass to Canada (1880). The boundaries of Manitoba are extended (1881), but the extension to the east is contested by Ontario. The provisional Districts of Assiniboia, Saskatchewan, Athabasca, and Alberta are created (1882).



1912



1949

The Imperial Privy Council provides a settlement of the Quebec-Labrador boundary question (1927). At its own request, after a plebiscite, Newfoundland enters the Confederation (1949).

